

財團法人 癌 研 究 會 編 纂

癌

第二十七卷 第 四 號

“GANN”

THE JAPANESE JOURNAL OF CANCER
RESEARCH

Founded by K. YAMAGIWA

and

Edited by M. NAGAYO

Vol. 27 No. 4

1933

Published Quarterly

by

THE JAPANESE SOCIETY OF CANCER RESEARCH

Editorial Office:

2 CHOME NISHI-SUGAMO TOSHIMA-KU TOKYO

癌

Gann (Jap.)

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癌 研 究 會 趣 旨

近時ニ於ケル自然科學ノ進運ハ頗ル著シキモノアリ、從ツテ其基礎ノ上ニ立ナル醫學ニ在リテモ研究益々精ヲ加ヘ緻ヲ極ムルニ至レリ、茲ニ於テカ從來ノ醫學的研究ガ多ク分科ノニシテ、同一疾病ノ調査ニ當リテモ各自専門の見知ヨリ互ニ相離レテ其作業ニ從ヒ各方面ノ多數學者ガ提携シテ協同研究スルガ如キハ頗ル稀レナリシニ反シ現代ニ於ケル學會ノ進運ハ此從來ノ研究方法ト共同の研究ノ緒モ亦自ラ開カル、ヲ見ルニ到レリ癌ノ協同的研究ノ如キ其一例ナリ。

古來宇内ノ隨所ニ見ラレ甚ダ酸鼻ナル難治ノ疾患タル癌ハ統計ニ徴スルニ之ガ爲メニ命ヲ致スモノ年々其數ヲ増加スルノ傾アリ、サレバ泰西ノ研究家ハ久シキ以前ヨリ其疾患ノ本態ヲ究メント企圖シ國家竝ニ社會モ亦之ヲ獎勵シ其研究ニ向テ多大ナル援助ヲ與フルノ例甚ダ夥ナカラザルナリ、抑モ癌ナル疾患ハ内科、外科、其他各方面ノ臨牀醫學科ニ於テ扱ハレ其研究ハ解剖組織學の事項ノ外化學の竝ニ生物學のニ互リ甚ダ廣汎ナル領域ヲ占ムルハ既ニ知ラル、所ナリ故ニ歐米諸國ニ於テハ夙ニ癌ノ如キ大問題ハ學者ノ孤立の研究ヲ以テハ到底其ノ本態ヲ闡明スル期ナキモノナルコトヲ悟リ各方面ノ學者相倚リテ其ノ協同研究ヲ遂ゲンコトヲ企テ特ニ癌研究會又ハ癌調査會ナルモノヲ設ケ完備セル研究設備ノ下ニ上記各方面ノ研索ヲ分擔セシメントシテ研究ノ歩武ヲ進メ來リシガ數年來國際癌研究協會開設セラレ爾來各國ノ研究團體互ニ聯絡ヲ保チ之ガ研究ヲ進メントスルニ至リ我邦亦卒先之ニ加入セリ、蓋シ我邦ノ如キハ歐米各國ニ比シ風土竝ニ生活、慣習、體質等ニ著シキ差異アルヲ以テ本邦研究者ノ之レニ加リテ此研究ヲ積ムノミニテモ或ハ比較研究上望外ノ結果ヲ齎シ貢獻スルコト夥カラザルベク且ツ我國ニ於テモ年々本病ノ爲メニ鬼籍ニ登ルモノ數萬ヲ下ラザルガ故ニ國家のニモ亦其研究ハ忽諸ニ附スルコト能ハザルモノアリ、サレバ本邦ニ於テモ上記世界ニ於ケル現代醫學ノ趨勢ニ順ヒ又一面人類ノ福祉ヲ増進セシメンガ爲メニ特ニ國際の性質ヲ有スル癌研究會ヲ設立シ、特殊ノ設備ヲ有スル研究所ヲ附屬シ癌研究ノ中央機關ヲラシメ、又同時ニ治療所ヲ設立シ最新ノ研究結果ヲ應用實驗スルハ實ニ國際の時運ノ風潮ニ鑑ミ科學近時ノ發達ヲ移シテ人類ノ幸福ヲ増進スル上ニ於テ刻下ノ緊要ナル事業タルヤ明ナリ、之本會ノ設立ヲ企テタル理由ナリ。(大正三年三月)

財團法人 癌研究會 寄附行爲

昭和八年十一月十七日設立許可

昭和八年十二月 一 日法人登記

第一章 總 則

第一條 本會ハ財團法人癌研究會ト稱ス

第二條 本會ハ癌其他ノ腫瘍ニ關スル研究及研究ノ獎勵並ニ其豫防治療ヲ爲スヲ以テ目的トス

第三條 本會ハ前條ノ目的ヲ達スル爲メ研究所及其附屬病院ヲ設置シ又ハ學術集談會ノ開催、優秀業績ヘノ授賞、研究費ノ補助、圖書雜誌ノ發行、國際的對癌運動ノ參加若クハ豫防知識ノ普及其他ノ施設ヲ爲ス仍必要ナル企劃ハ評議員會ノ議決ヲ經テ之ヲ定ム

前項ノ研究所及附屬病院、集談會、授賞、補助並ニ圖書雜誌ノ發行等ニ關スル規定ハ別ニ之ヲ定ム

第四條 本會ハ事務所ヲ東京市豐島區西巢鴨二丁目二千六百拾五番地ニ置ク

第二章 資産及經費

第五條 本會ノ資産ハ左ノ如シ

- 一、社團法人癌研究會ヨリ寄附ヲ受ケタル別紙目録記載ノ財産
- 二、後援會其他ノ者ヨリノ寄附ニ依ル金品
- 三、帝國政府ノ補助金
- 四、其他ノ收入

第六條 本會ハ左ノ財産ヲ基本財産トス

- 一、前條第一號ノ財産
- 二、前條第二號ノ寄附金品、但シ用途ヲ指定シテ寄附シタル金品ハ此ノ限ニアラス
- 三、繰越金中評議員會ニ於テ基本財産

ニ編入スヘキコトニ議決シタル金品

第七條 基本財産ハ費消スルコトヲ得ス但シ臨時必要ナル場合ニハ評議員會ノ議決ヲ經テ經常費又ハ當該ノ費目ニ繰入ルルコトヲ得

第八條 基本財産ハ國債證券又ハ確實ナル有價證券ヲ買入レ若クハ郵便官署又ハ確實ナル銀行、信託會社ニ預入レテ保管ス資産ノ管理ニ關スル細則ハ評議員會ノ議決ヲ經テ別ニ之ヲ定ム

第九條 本會ノ經費ハ左ニ掲グルモノヲ以テ支辨ス

- 一、基本財産ヨリ生スル收益
- 二、帝國政府ノ補助金
- 三、用途ノ指定アリタル寄附金
- 四、繰越金中基本財産ニ編入セサル金品
- 五、其他ノ收入

第十條 本會ノ會計年度ハ毎年四月一日ニ始マリ翌年三月三十一日ニ終ル

第十一條 本會ノ豫算及ビ決算ハ評議員會ノ議決又ハ承認ヲ經ルコトヲ要ス必要アルトキハ評議員會ノ議決ヲ經テ別途特別會計ヲ設クルコトヲ得

第十二條 年度末決算ニ剩餘金ヲ生シタルトキハ之ヲ翌年度ニ繰越ス但シ評議員會ノ議決ヲ經テ之ノ一部若ハ全部ヲ基本財産ニ編入スルコトヲ得

第三章 總裁及顧問

第十三條 本會ニ總裁一名ヲ推戴ス

第十四條 本會ニ副總裁二名ヲ置ク

第十五條 本會ニ名譽顧問及顧問若干名ヲ置ク

第十六條 副總裁ハ總裁之ヲ囑託シ、名譽顧問ハ左記ノ者ニ對シ總裁之ヲ囑託ス

一、主務大臣

二、評議員會ニ於テ推薦シタル者

第十七條 顧問ハ理事會ノ推薦ニ依リ總裁之ヲ囑託ス顧問ハ本會ノ諮問ニ答フ

第四章 役員

第十八條 本會ニ左ノ役員ヲ置ク

會 頭 一 名

副 會 頭 二 名

理 事 長 一 名

理 事 十 名以上
十五名以内

監 事 五 名以内

評議員會長 一 名

評 議 員 若干名

第十九條 理事及監事ハ評議員會ニ於テ之ヲ選舉ス

第二十條 會頭、副會頭及理事長ハ理事中ヨリ互選ス但シ會頭又ハ副會頭ハ時宜ニ依リ理事長ヲ兼ヌルコトヲ得

第二十一條 評議員會長及評議員ハ會頭之ヲ囑託ス

第二十二條 會頭ハ本會ヲ統轄シ評議員會ヲ除ク外學術集談會其他ノ會議ノ議長トナル副會頭ハ會頭ヲ補佐シ會頭事故アルトキハ之ヲ代理ス

第二十三條 理事長ハ本會ヲ代表シ會頭ノ旨ヲ受ケテ一切ノ會務ヲ處理ス
理事長事故アルトキハ豫メ理事長ノ定メタル順序ニ依リ他ノ理事代テ其職務ヲ行フ
理事長ハ理事會ノ議決ヲ經テ有給ノ書記

若干名ヲ置クコトヲ得

第二十四條 監事ハ本會ノ會計及資産ヲ監査ス

監事必要アリト認メタルトキハ評議員會ノ招集ヲ要求スルコトヲ得

第二十五條 評議員ハ評議員會ヲ組織シ本會權要ノ事項ヲ評議ス

評議員會ハ必要ニ應シ會頭之ヲ招集ス評議員半數以上ノ同意ヲ以テ評議員會招集ノ請求アリタルトキ及前條第二項ニ依リ監事ヨリ請求アリタルトキ亦同シ

第二十六條 評議員會長ハ評議員會ノ議長トナル

評議員會長事故テルトキハ會頭ノ指定シタル評議員之ヲ代理ス

第二十七條 評議員會ノ招集ハ會議ノ目的タル事項、日時、場所ヲ指示シテ開會七日前ニ各評議員ニ招集ノ通知ヲ發スヘシ但シ會頭ニ於テ緊急必要アリト認メタル場合ハ此限ニアラス

第二十八條 評議員會ニ出席スルコト能ハサル評議員ハ書面ヲ以テ表決ヲ爲シ又ハ他ノ評議員ニ其代理ヲ委任スルコトヲ得
評議員會ニ出席ノ評議員並ニ前項ノ書面表決及代理表決ノ數カ全員ノ半數以上ニ達スルニ非サレハ議決スルコトヲ得ス
評議員會ノ議事ハ過半數ヲ以テ之ヲ決ス可否同數ナルトキハ議長ノ決スル所ニ依ル

第二十九條 役員ノ任期ハ各三年トス但シ再任ヲ妨ケス

役員ニ缺員ヲ生シ會頭必要アリト認メタルトキハ評議員會ニ諮リ第十九條乃至第二十一條ノ規定ニ依リ各其補缺員ヲ定ム
補缺員ノ任期ハ前任者ノ殘任期間トス

第三十條 役員ノ任期満了シタル場合ニ於

テモ其後任者ノ就任スルマテハ仍前任者
ニ於テ其職務ヲ行フ

第五章 附 則

第三十一條 社團法人癌研究會ニ於テ推薦
シタル名譽會員ニ對シテハ本會ニ於テモ
亦其ノ待遇ヲ承繼ス

第三十二條 本會ノ目的ヲ翼賛スル爲メ別
ニ後援會ヲ設立スルコトアルヘシ
後援會ノ名稱其他必要ナル規定ハ別ニ之

ヲ定ム

第三十三條 本寄附行爲ノ條項ヲ變更セン
トスルニハ評議員四分ノ三以上ノ同意ヲ
得主務官廳ノ認可ヲ經ルコトヲ要ス此場
合第二十六條ノ規定ヲ準用ス

第三十四條 本會設立ノ際ノ役員ハ設立者
之ヲ選任ス
前項ノ役員就任スルマテハ設立者其職務
ヲ行フ

東京市豐島區西巢鴨二丁目二千六百十五番地

事 務 所

財 團 法 人

癌 研 究 會

財團法人癌研究會役員

總裁 伏見宮博恭王殿下

副總裁 公爵近衛文麿

會頭 醫學博士 長與又郎

副會頭

醫學博士 鹽田廣重

醫學博士 稻田龍吉

理事

醫學博士 長與又郎(理事長)

醫學博士 南大曹

醫學博士 鹽田廣重

子爵 滋澤敬三

醫學博士 稻田龍吉

醫學博士 磐瀬雄一

醫學博士 木村德衛

山本留次

醫學博士 佐々木隆興

鹽原又策

醫學博士 男爵 高木喜寛

醫學博士 西野忠次郎

醫學博士 官川米次

監事

男爵 森村市左衛門

磯村豊太郎

今村繁三

評議員會長 醫學博士 入澤達吉

評議員

醫學博士 入澤達吉

池田成彬

醫學博士 磐瀬雄一

林 曄

醫學博士 稻田龍吉

醫學博士 林 春雄

醫學博士 稻垣長次郎

服部金太郎

醫學博士 稻畑勝太郎

醫學博士 芳賀榮次郎

醫學博士 今村荒男

醫學博士 八田善之進

醫學博士 今村繁三

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磯村豊太郎

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岩垂亨

醫學博士 西野忠次郎

醫學博士 岩永仁雄

西脇濟三郎

| | | |
|------|----------|------|
| 醫學博士 | 本 | 田雄五郎 |
| | 細野順 | |
| | 堀啓次郎 | |
| 醫學博士 | 土肥章司 | |
| 醫學博士 | 遠山郁三 | |
| 醫學博士 | 岡田和一郎 | |
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| 醫學博士 | 緒方十右衛門 | |
| 醫學博士 | 大槻菊男 | |
| | 小倉正恒 | |
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| 醫學博士 | 小小澤凱夫 | |
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| 醫學博士 | 高野六郎 | |
| 醫學博士 | 男爵高木喜寬 | |
| 醫學博士 | 醫學博士高安道成 | |
| 醫學博士 | 醫學博士田代義德 | |

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| 醫學博士 | 武田村長兵衛 |
| | 鶴田禎次郎 |
| 醫學博士 | 都築正男 |
| 醫學博士 | 長與又郎 |
| | 男爵中島久萬吉 |
| 醫學博士 | 醫學博士南條金雄 |
| 醫學博士 | 醫學博士村田官吉 |
| | 久保德太郎 |
| 醫學博士 | 吳間滋 |
| 醫學博士 | 醫學博士草田三樹三郎 |
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| 醫學博士 | 楠本莊恒次郎 |
| | 矢野三準次 |
| | 山田本留佐 |
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| 工學博士 | 牧松波寅吉 |
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| | 眞鍋嘉一 |
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小兒に於ける原發性睪丸癌腫の一例

陳 紹 禎

Fall von Hodenkrebs bei einem Kinde.

Von

S. Chin.

Aus dem Pathologischen Institute der Kaiserlichen Universität
zu Tokio. Vorstand: Prof. M. Nagayo.

Mit Tafel

Bei einem 2 Jahre und 5 Monate alten Kinde beobachtete man eine Schwellung am linken Hoden, die innerhalb 6 Monate die Größe eines kleinen Hühnereis erreichte. Im Verlauf von etwa 1 Jahr nach der Kastration des Tumors beobachtete man in retroperitonealer Gegend einen kindskopfgroßen metastatischen Knoten.

Auch in der Leber und in der Lunge befanden sich mehrere metastatische Knoten. In der linken Nebenniere konnte man eine kleine Metastase nachweisen.

Gleichzeitig litt das Kind an einer Komplikation der Pleuritis und der Pneumonie und starb nach 3 Monaten.

Makroskopisch. Der Hodentumor ist etwa hühnereigroß und elastisch-weich. Die Schnittfläche desselben ist überall markig teigig, dabei lässt sich auch Blutung und Nekrose beobachten.

Histologisch. Bei der histologischen Untersuchung lässt sich unter Tunica propria nur wenig, relativ gesundes Hodengewebe erkennen.

Im Geschwulstgewebe sieht man verschiedenegroße Parenchymzellen mit chromatinreichem Kern und atypische Kernteilungsfiguren. Die Tumorzellen sind mehr oder minder dicht, gedrängt und häufig in drüsigen und papillomartigem Aussehen angeordnet. Ferner

findet man darin einige Blutungsherde. Auf Grund der obenerwähnten histologischen Befundes möchte ich das Tumorgewebe als Carcinoma adenomatosum papilliferum nennen.

Alle metastatischen Knoten sind histologisch von fast gleicher Beschaffenheit wie der primäre Hodentumor.

Die Genese dieses Hodentumors konnte weder von Rete testis, noch von Tubuli recti nachgewiesen werden.

Auch in der Anamnese konnte kein Beweis über eine Verletzung erbracht werden, folglich ist nur eine Art von Hamarton denkbar.

緒 言

睾丸の原発性癌腫は一般には甚だ稀有なれども、小兒期に於ては比較的屢々認めらるゝものなり。

然し乍ら余の調査したる所によれば、本邦に於ける報告は未だ 15 例に過ぎず。

余偶々 4 歳 2 ヶ月の小兒の左側睾丸に原発し、後に後腹膜淋巴腺及び肝臓に、廣汎なる轉移を形成したる癌腫の一剖検例を得たるを以て茲に報告せん。

剖検例

渡邊某 男 4 歳 2 ヶ月

剖検録番號 215 番、(1931 年 11 月 23 日剖検)。

病歴 (同愛紀念病院)

癌腫の遺傳的關係なし。

本病の發端は 1929 年の暮頃にして、左側睾丸の輕度の腫大を認めたるに始まる。該睾丸は爾來漸次増大し、1930 年 6 月 5 日來院當時は、約鵝卵大に達し、陰囊は一般に赤色を呈せり。然れども從來未だ嘗て何等の苦痛をも訴へたることなかりしと云ふ。

入院當時 (1930 年 6 月 26 日)の容態。

一般症狀。

身體は中等大、體格强健、榮養良好、顔貌は通常にして、脈搏並に呼吸狀態普通、頸部に異常なし。舌は濕潤にして苔を被らず、咽頭通常にして扁桃腺の腫脹なく、皮膚濕潤し、淋巴腺は鼠蹊腺を除く外腫大を認めず。

局所症狀。

陰囊は外觀上全般に膨大し、皮膚は暗赤色を呈し、觸診するに約鶏卵大以上の境界明瞭にして、皮膚と癒著せざる移動性腫物を觸知するを得。該腫物は表面平滑、硬度は彈力性軟にして緊張し居り、左側陰囊の何れの箇所にも、半透明性の所見を認めず。

右鼠蹊管入口は普通の示指頭大、右鼠蹊管入口は幾分小なり。兩側の鼠蹊腺は多數腫脹し、大なるものは約豌豆大に達せり。

6月5日試験的穿刺を施し、血性の液體を得たり。

剔出腫瘍の所見竝に診斷

6月26日入院翌日腫大せる睾丸の剔出を行へり。

剔出せし睾丸は小鶏卵大を有し、剖面は髓様なれども、一般に軟かく、所々に多數の小さな囊胞様のものを形成し、輸精管は極めて細く、精系の血管は比較的大し。

手術後の診斷

左側睾丸の惡性腫瘍(腺癌)なり。

手術後の経過極めて良好にして、7月4日創口が第一期癒合に赴くと同時に、一般的狀態も甚だ良好なりとにより退院す。

其の後の経過。(本學附屬醫院小兒科病歴)

1931年11月3日本學附屬病院入院。

同愛病院退院以來1年餘の間は異常なかりしも、本年9月上旬屢々腹痛を訴へ、殊に左側腹に刺す如き疼痛を訴ふる事あり。同時に腹部膨滿し、10月10日には左下腹に腫物を發見され輕度の壓痛あり、10月下旬より腫物の増大極めて急速に進行し、腹痛亦屢々劇甚となり、腹部の膨大は増強し來れり。

11月3日本學附屬醫院小兒科に入院す。當時榮養惡しく、明かに惡液質性羸瘦を示し、腹部膨脹甚しく、左側季肋下より臍部に達する大なる腫物を容易に觸るゝを得たり。

而して臍部に於ては右方へ壓痛を覺ゆる大なる突起を出せり。

更に肝臟は此物と分離して觸るゝを得、乳線季肋弓下二横指迄腫大せり。

當時腹水なく、脾臟を觸れず、頸部淋巴腺は豌豆大に、鼠蹊淋巴腺は小指頭大に腫脹しむたれども柔軟なりき。

左側睾丸は剔出されたるが故に之れを缺く、右側睾丸には異常なし。

入院後腫物は益々増大し、11月4日頃には肝臟表面にも大なる胡桃大に達する結節を形成し、同時に氣管枝炎を併發せり。同18日には腹水現はれ臍部に皮下溢血斑を呈す。腹水は血液を混じて飴色を呈し、腹部膨大強く、呼吸困難を訴ふるに至り、屢々黃褐色液を嘔吐し惡液質は益々高度となる。爾來輕度の發熱頻發し、遂に氣管枝肺炎を起し、11月23日死亡せり。X線検査に依り肺臟、骨格共に轉移を見ず。

剖檢的診斷

1. 小兒頭大に達せる一部出血性、一部膠樣壞死性の柔軟なる實質性後腹膜

腫瘍(去勢左側辜丸癌腫の後腹膜淋巴腺轉移)。

2. 肝臓に於ける種々なる大さを有する無数の癌腫轉移。
3. 軽度なる播種性癌性腹膜炎。
4. 血性腹水症(500cc)。
5. 腎門部腫瘍増殖による左側水腎性萎縮腎。
6. 左肺下葉及び右肺上下葉に於ける數個の癌腫轉移。
7. 右側氣管枝側氣管枝竝に靜脈角淋巴腺内腫瘍轉移、鼠蹊部淋巴腺腫脹(組織學的に轉移を證せず)。
8. 兩肺背部の廣汎なる竈狀肺炎及び肋膜下小轉移竈。
9. 高度なる瀰漫性心筋脂肪變性。
10. 脾臓萎縮。
11. 肝臓實質の鬱血萎縮竝に軽度の中心性脂肪變性。
12. 高度なる加答兒性氣管一竝に氣管枝炎。
13. 軽度の胃加答兒竝に小腸の水腫。
14. 軽度の兩側漿液性纖維索性肋膜炎。

剖檢的所見

體格中等の著しく羸瘦せる小兒屍にして、一般に貧血性蒼白、皮下脂肪は著しく減少し、筋肉の發育は不良なり。

腹部は強く半球狀に膨脹し、腹部及び脛骨に於て浮腫を認め、腹壁殊に側腹壁に於ては著しき靜脈の怒張を見、臍部に指頭大赤褐色の出血斑を認む。

鎖骨上の淋巴腺は蠶豆大に腫脹せり。

腹腔を開きて觀るに、腹腔の殆ど下半に左半は磊塊狀の約兒頭大に達する腫瘍を以て充され、腹部臓器殊に腸管、腸間膜及び脾臓等は壓排せられて遙かに右上方に偏移せり。

腹壁を切開せしに、後腹膜淋巴腺に於ける癌腫轉移の互に相融合して大塊を形成せるものが腹壁の直下に現はれたり。

大網膜は脂肪乏しく、下方に垂下して腸及び腫瘍物質を覆うて一部癒合す。腸は鼓脹し、腸間膜は腫瘍の爲に右上方に押し上げられ、脂肪に乏しく無數

の豌豆大乃至小豆大に腫大せる淋巴腺を有す、其の剖面は何れも髓様を呈す。

腹腔内腫瘍は主として左側下腹部に存し、右方は脊椎を越えて右腹腔の左半を満し、下方は薦骨岬の高さに止まり、小骨盤に入らず、上方は右腎の中心に及ぶ、腫瘍の中心に相當する處は右腰筋の附著部附近なり。

此の大腫瘍塊は腹部大動脈の下方を完全に包圍し、右腰筋中にも深く浸潤し、又左側腎臓の腎門部並に腎盞中にも腫瘍轉移侵入す。これが爲水腎症を惹起し、腎盂は著しく擴張し、腎臓は腎盂と表面との距離約 1.0 cm. に過ぎず、即ち左腎は恰も囊狀を呈す。

腫瘍の性状

後腹膜腫瘍は實質性にして一般に柔軟、稍々弾力性あり、一部は軟化して糊狀泥狀を呈す。色調は一部は黃色蒼白色、一部は出血性赤褐色にして極めて多様の外觀を示す。殊に左腹部の塊狀に突起せる部に於ては出血甚だしく暗赤色乃至暗綠色を呈す。

● 剖面を觀るに壞死軟化及び出血の傾向極めて強く、褐色暗赤色を呈し、膠様乃至糊狀泥狀の部分混じて非常に破壊し易き粘著性物質よりなる。殊に右半部に於ては出血性破壊性強く、暗赤色又は暗綠色を呈し、變性強く、肉眼上一般に黃色を帶ぶ。概して圓形又は卵圓形の鶏卵大或は栗大等種々の大きさの腫瘍塊互に融合せる狀を見る。その間には僅少の灰白色の結締織を存するのみ。

副腎：兩側共に腫瘍外にありて、右側副腎の皮質には脂肪よく保存せられ、髓質に異常なし。左側副腎の皮質はよく發達し、髓質は腫瘍浸潤に依りて一部破壊せらる。

右側腹部及び前腹壁の腹膜は粗面にして稍々光澤を缺けども播種を見ず。

腸の漿膜は滑澤にして異常なし。後腹膜淋巴腺の上部に位するもの、肝門周圍及び脾部淋巴腺には轉移竈なく、腸間膜淋巴腺及び腎周圍淋巴腺は何れも多少腫大すれども組織學的に轉移形成は見出さず。

上行結腸腸間膜及び小腸腸間膜の淋巴腺は、無數に小豆大乃至豌豆大或は大豆大の轉移を形成す。

又横膈膜の下面には多くの米粒大乃至豌豆大の幾分半透明なる灰白色の小結節を附著す、即ち播種による癌性腹膜炎あり、腹水は暗赤色、血性にして約 500 匁あり。

肝臓：表面には左右兩葉の別なく灰黃色柔軟にして、鶏卵大乃至大豆大の無數の半球狀に突出し、その中心臍窩狀に陥没をなせる轉移結節存し、正常の約2倍の重量に達す。横膈膜を輕度に癒著し、横膈膜を高く胸腔に向つて壓迫す。割面を觀るに、固有の肝臓實質は鶏卵大乃至蠶豆大の無數の轉移竈の爲めに壓迫せられて著しく萎縮し、腫瘍結節の間に帶狀をなし、割面全體の半分にも達せず。

色は黃褐色にして強く濁濁し、小葉像は全然不明瞭なり。轉移結節は腹部の大塊に見られたるものと同性狀を示し、比較的境界明瞭にして、中心屢々壊死崩壊し、分葉狀をなすものあり。この結節は左右兩葉殆ど均等に存在すれども大なるものは右葉に多し。右の大なる門脈枝は潰瘍及び血栓を以て充塞せらる。

膽囊：粘膜は水腫性にして、少量の淡黃褐色の膽汁を容る。

脾臓：幾分小にして、淡赤褐色、脾膜は輕度の皺襞を有す。脾濾胞は不明瞭、脾梁も亦明かに認むるを得ず。髓質粥狀にしてよく擦落す。血液含量は明かならず。

胃：の内容は少量の黃褐色粥狀物にして粘膜は柔軟且つ輕度の粘液を以て被られ、充血せる外異常なし。

十二指腸及び空腸の粘膜は輕度の粥狀粘液性物質に被られ、浮腫著明なり。

迴腸は迴盲部は稍々貧血し水腫性にして僅かに粘液を以て被られ、淋巴裝置に變化なし。大腸、盲腸異常なし。

膀胱：柔軟にして弛緩（自家溶解）せる外異常なし。膀胱は鳩卵大にして少量の茶色の尿を含有す。粘膜に異常なし。

右の睾丸：腫大せず、割面殆ど異常なし。

胸腔の所見。

胸腺は實質性にして、心嚢に異常なし。心嚢液は僅かに増加す。

左肋膜腔に約500 ㄊ、右肋膜腔に70 ㄊの黃褐色の液體を含有し、兩側の體側肋膜輕度に充血し、肋膜下には處々に扁豆大乃至豌豆大の轉移結節ありて、肋膜腔に突出す。

兩肺共容積稍々大きく、心臓は屍の手掌大にて弛緩し心尖は左心室によりて形成せられ、心臓外膜下脂肪組織は甚だ少なし。心臓内膜は滑澤、左室心筋一般に黃褐色、内膜は滑澤にして瓣膜の境界異常なし。右室は左室と同様なり。

動脈起始部は菲薄、冠狀動脈に異常なし。

肺臓は左右共に實質中に數個の小きき「リンセ」豆大乃至大豆大の、多くは肋膜下に

位する轉移竈を有し、その剖面は一般に水腫性、上葉には肝變様の小病竈散在す。下葉背部には約鶏卵大に達する楔狀の肝變竈あり。

右肺上葉少しく増大し、上葉後方の肋膜面に4,5箇の小豆大乃至蠶豆大の轉移結節あり、剖面は上葉並びに下葉及下葉背部に於ては可成廣く無氣性にして、一般には水腫性なり。下葉舌部の前部に2箇の豌豆大の轉移竈あり。茲に注目すべき點は右氣管枝淋巴腺に小豆大、側氣管淋巴腺に母指頭大、更に右側靜脈角淋巴腺數箇に豌豆大の轉移竈を形成し、腫瘍化して或るものは軟化を示すことなり。

鼠蹊淋巴腺は左右兩側共1,2箇約小指頭大に腫大す。

同愛記念病院外科より貸與せられたる**別出睾丸標本の肉眼的所見**。

左側睾丸は約鶏卵大に腫大し睾丸の形態を保持し、その表面の睾丸固有膜は滑澤にして異狀を認むることなし。

剖面は一樣に大部分腫瘍に化し、髓様にして肉眼上固有の睾丸實質認め難く、弾力性柔軟なる小嚢胞様のもの多數見出され、所々に出血して暗赤色を呈する部分及び壊死に陥りて褐色或は黃褐色を呈する部分互に混合し、一見して甚だ多様の觀あり、又一般に膠様にして粘液性なり。

之れを更に詳しく觀察せんに、邊緣部に於ては嚢胞及び出血竈は一般に小なれども、中心に向ふに従ひ大きさを増し、其の数も増加す。殊に上半部に於ては最も顯著なり。

腫瘍の病理組織學的所見

原發腫瘍及び主要轉移竈、その他の臓器の病理組織學的所見は次の如し。

左側睾丸の固有膜は右側のものに比し一般に肥厚し、結締組織増殖甚しく彈力纖維も亦可成り著明なり。

固有膜下の血管は處により著しき充血擴張を呈す。

固有膜の内部にも間質結締組織増殖著しく、且つ大部分は腫瘍組織の占むる處となり、爲めに睾丸實質は壓迫せられて、固有膜の直下に縦かに固有の睾丸實質を残存するのみ。

間細胞は殆ど見出し難し。血管は處により著しく擴張して、中に多量の赤

血球を充す。又處により多數の多形核白血球の浸潤を認むれども増殖せる部分に於ける間質には圓形細胞の浸潤を見ず。

腫瘍細胞の大きさは概して餘り大ならず。原形質は核に比して一般に少なく、「エオジン」には好染せず。

此等の腫瘍細胞は大小不同の種々なる胞巢を形成し、單層、重層、若くは多層なれども、大體に於て重層にして非典型的なれども、大體乳嚢性腺癌の造構をなす(寫眞参照)。

囊胞内には「エオジン」に淡染する等質性物質を含有するものあり、但し粘液反應陰性なり。又血液を含有するもの往々あり。

核は大小甚だ不同なる圓形、卵圓形、不正圓形を呈し、染色質甚だ不定にして従てその濃淡の程度種々なり。一般に核小體を認めず、間質分裂像を所所に認む。

間質は實質に比し一般に遙かに少きも、多き處にありては疎鬆にして囊胞腔内に乳嚢様突起を出し、且つ其の中の或るものは分枝狀をなす。基質内には結締織存在するも彈力纖維なく、格子狀纖維は僅かに染出せらる。基質は甚だ毛細血管に富む。囊胞内には「エオジン」にて淡染する粘液物質あるも粘液反應は陰性なり。

脂肪滴は腫瘍の胞巢内に於て可なり多量にして、殊に乳嚢狀の腫瘍細胞附著部に著明なり。

腫瘍細胞に「グリコゲン」の存在を證明し得ざりき。

睾丸網及び其の附近には輕度の結締織増殖あり、また細精管には僅に腺腫様増殖を見るものあり。

副睾丸及び精系に著變なし。

右側睾丸は健全にして曲細精管の上皮細胞中僅かの原精細胞の發育を認め、曲細精管は割合に多數にして間質略々正常にして、間細胞存在し組織球を混す。

後腹膜淋巴腺の轉移、大部分は壞死しをるも、腫瘍組織の殘存せる處に於ては乳嚢狀に増殖を營むもの多く、核は濃縮し、又は消失す。

その他の組織的所見は原發竈と同様にして全體の腫瘍組織中尙ほ固有の淋巴腺組織は腫瘍組織の間に多少殘存す。

肝臓内腫瘍轉移は左右兩葉何れも大部分は非常に多數の囊胞性乳嘴狀構造を呈し、腫瘍細胞の脂肪變性を認む。基質には極く微量の結締組織纖維あり、その間出血及び壞死著明にして細胞の密集せる處に於ては往々巨大細胞存在す。肝實質は著明なる萎縮を呈し、腫瘍附近の肝細胞は紡錘形に變化し、著しく腫瘍物質に壓迫せられたる像を呈す。肝小葉中心部肝細胞に脂肪化を認む。

左右兩肺門部の淋巴腺及び肋膜下の淋巴腺轉移竈は、同じく乳嘴性腺狀の構造をなし、その内に毛細管多く又出血する處あり。腫瘍細胞は原發竈と同様にして中に巨大細胞を混じ、核も甚だ多數にして小なるものは濃染し大なるものは泡狀にして、核分裂も盛なり。此等淋巴結節の周圍に僅かに淋巴組織の痕跡を残すに過ず。左右兩肺背部の肺胞内に於て炎性浸潤強く、中に多くの多形核白血球及び淋巴球、組織球を認められ氣管枝肺炎の像あり。此炎症竈の附近には出血せる處あり。一般に肺水腫の状態を呈す。肺肋膜稍々肥厚せる以外著變なし。

右下葉舌部には原發竈と組織學的に同様な小腫瘍轉移結節を認む。

腎臓。左右共死後の變化著明にして詳細を正確に知る能はざるも左腎々盂には腫瘍浸潤あり。其他著變なし。右腎にも死後の變化以外に著變なきが如し。

副腎。左側副腎の皮質及び髓質の一部は外部より腫瘍組織の侵襲を受く。右側副腎に組織學的には異常なし。

脾臓。被膜は輕度の皺襞を呈す。髓索に輕度の纖維増加ありて、脾材脾髓の境界不明、脾髓細胞は少なし。中心動脈には硝子樣變性可成り著明なるものあり、且つ慢性の鬱血認めらる。

横膈膜。上下兩葉膜面及筋層殊に下面には多數撒種狀の腫瘍轉移あり。其の組織的構造は原發竈と略々相似たり。

胃粘膜に著變なし。脾臓には組織的に異常なし。小腸及び大腸は水腫を呈する外に異常なし。腸間膜淋巴腺著變なし。

胸腺、HASSAL 氏小體は豊富にして殊に大なるもの多く中に石灰變性して、萎縮するものもあり、皮質及び髓質の區別不明なり。

甲状腺、顎下、扁桃腺、共に組織學的に異常なし。鼠蹊淋巴腺に網狀細胞多く、白血球、「プラスマ」細胞ありて稍々水腫を呈し、多少充血の觀あり、その内に腫瘍細胞を認めず。

心臓外膜に異常なし、心筋には高度の普遍的脂肪變性あり。

總括及び考案

茲に報告せんとするものは4歳2ヶ月の男兒の剖檢例にして、其の左側睾丸に原發竈を有し、後腹膜淋巴腺及び肝臓、腎臓、腹膜、肺臓竝に肺門及びその下流域の淋巴腺等に互り廣汎なる轉移を形成し居たる例なり。

左側睾丸は満2歳半頃より次第に腫大し、その後約半年にして鶏卵大となり外科的に剔出せられ、1年餘を無事に経過せしも、終に腹痛及び腹部膨滿竝に淋巴腺腫脹等の腫瘍轉移に因る症狀を現はし、最後に氣管枝肺炎を以て死亡したり。

剔出せられたる左側睾丸は小鶏卵大にて一般には實質性にして、柔軟、稍々彈性あり、一部は軟化せり。剖面の色は腫瘍組織の帶黃灰白色と出血竈の赤褐色とにより複雑に相交錯し多彩なり。

組織的には腫瘍は乳嘴狀腺癌の像を示す、其の腫瘍細胞は骰子形、低圓柱形或は寧ろ扁平にして、大小不同一般に原形質に乏しく、核は圓形又は橢圓形なり。腫瘍組織の間質は少きも比較的毛細血管に富む。

固有の睾丸實質は基質の著明なる増殖の爲めに著しく萎縮せり。

各轉移竈の組織的所見も略々原發竈に於けると同様なり。

諸所に廣汎なる轉移を形成するも、其の發生経路は一ならざるなり、即ち剔出手術時既に存在したる鼠蹊腺轉移より淋巴行により後腹膜淋巴腺に轉移し著大なる腫瘍塊を形成し、他方血行により肝臓に轉移竈を作り更に肺臓にも轉移したるなり。右側氣管枝淋巴腺、副氣管淋巴腺及び右側靜脈角淋巴腺に轉移を認むるも、之れを以て淋巴行を介して生じたるものとみなすべからずして、肺臓轉移より再び淋巴管により此處に來りしものなり。

TILLMANN 氏は睪丸腫瘍の約 50 % に於ては外傷が一原因と考へらるゝとし、KAUFMANN 氏も本腫瘍が壯年者に屢々發生する事實より外傷を以て一種の主要なる原因と見做し、其他多くの學者之れを是認す。

然れども本例の腫瘍は滿 2 年餘の男兒に發生したるものにして、何等原因と認むべきものなきを以て先天的に睪丸内に腫瘍芽原基が存在し、時を得て急に増殖したるものと解せらる。即ち本腫瘍は過誤芽腫 Hamartoblastom と云ひ得べし。

結 論

1. 本例は睪丸の非典型的乳嘴様腺癌にして、滿 2 歳餘の男兒の左側睪丸に原發したるものなり。
2. 腫瘍發生の外因と認むべきものなく小兒の睪丸内に發生したるものを以て睪丸に發生したる一種の Hamartoblastom と云ふべし。

稿を了るに當り御校閱を賜りたる長興教授並に御懇切なる御指導を蒙りたる緒方教授及鈴木助教授に衷心感謝の意を表す。尙ほ貴重なる材料を御供與せられたる同愛紀念病院病理部長竹内氏及び同外科諸氏に銘謝す。

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附 圖 說 明

Fig. 1. 左の剔出睾丸の約實物大の縱斷面を示す.

Fig. 2. 同上 約實物大の表面を示す.

Fig. 3. 固有膜及び殘存睾丸實質の形態及び比較的密集せる囊胞狀乳嘴樣腺腫の造構を示す圖.

Fig. 4. 同上の一部の強擴大圖.

Fig. I



Fig. II



Fig. III

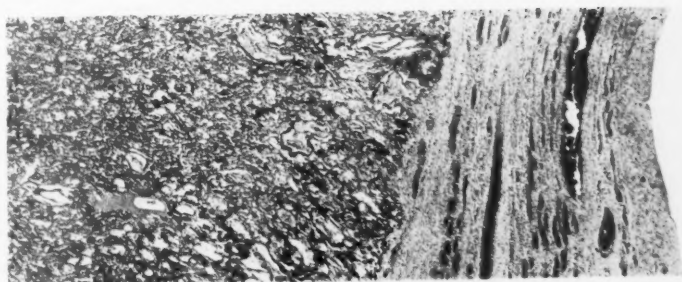
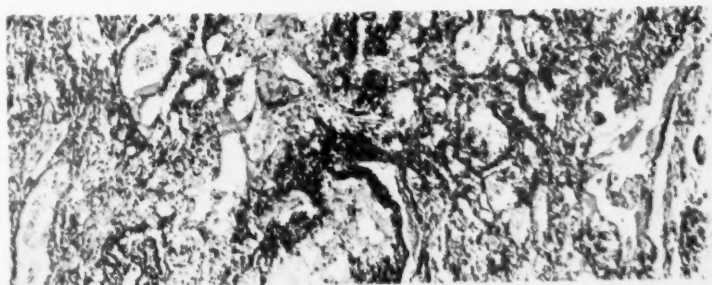


Fig. IV



家鶏肉腫の研究

千葉醫科大學病理學教室

石 橋 松 藏

篠 原 規 休

Studien über das Hühnersarkom.

(II. Mitteilung.)

Von

Prof. Dr. M. Isibasi und Dr. N. Sinohara.

(Pathologisches Institut der med. Universität zu Tiba.)

In der I. Mitteilung haben wir berichtet, dass im Hühnersarkom im getrockneten Zustande oder in Pulver keine lebendigen Tumorzellen vorhanden sind. Wir haben nun die Forschung der Tumorpulver in verschiedenen Richtungen fortgesetzt und kamen zu folgendem Schlusse.

1) Das getrocknete Material des Hühnersarkoms, das in Glasampullen luftdicht und vor Licht geschützt im Eisschrank aufbewahrt wurde, ist noch deutlich impffähig. Ein Material ist es noch über 1000 Tage nach dem Trocknen.

2) Wann man das Sarkompulver mit frischem Hühnerembryonalbrei mischt und impft, erhöht sich der Prozentsatz der Impfbarkeit ausserordentlich und beträgt etwa 74 bis 91%, bei Sarkompulverimpfung mit ausgetrocknetem Hühnerembryonalgewebe oder Hausentenembryonalbrei beträgt die Positivität dagegen 37 bis 44%.

3) Schliesslich glauben wir nachfolgende Meinung vertreten zu dürfen. Da das im getrockneten Pulver enthaltene Tumorigewebe das Embryonalgewebe tumorbildend beeinflusst, erhöht die Impfung des Tumorpulvers mit frischem Hühnerembryonalbrei seinen positiven Prozentsatz immer erheblich mehr als jede andere Impfung

ohne Embryonalbrei.

家鶏肉腫乾燥材料中に生活細胞があるかないか云ふ問題は甚だ議論のある處であつて、中原、隅越氏及び HAAGEN は乾燥材料を培養して細胞の増殖するを確め、それを家鶏に移植して腫瘍陽性なることを證明し、又中原、隅越の兩氏は乾燥材料を乳鉢で細粉すれば、その機械的傷害の程度により移植率に差を生ずる事を確めた爲、これらの人々は乾燥材料の移植能力は腫瘍細胞によるものと主張してゐる。

私共も此の點に興味を持ち先年乾燥材料の保存抵抗及び培養試験を行ひ其の結果、一年以上の保存に堪へ 100 日以上保存した乾燥材料の培養は全く陰性であることを知り、長い間保存した乾燥材料は生活細胞なしでも腫瘍移植の可能なることを信ずる様になつた。即ちこの乾燥材料中には生活細胞なくある腫瘍起原があつて、それを家鶏に移植するに、その家鶏の組織が或る影響を受けて腫瘍化する様に思はれる。

しからば腫瘍起原が乾燥材料中で如何に長い間その能力を保持してゐるか、又時間の経過とともに腫瘍起原の能力が衰へて行く様な場合、胎兒組織の如くある刺激に對して成熟動物組織より labil である様なものを混合移植した場合その移植力に如何なる影響を及ぼすものであるかを知らんとして次の實驗を試みたのである。

第一實驗 (鶏胎混合移植)

肉腫乾燥材料製法、Rous 系家雞肉腫を細にきざみ鹽化「カルシウム」を入れた乾燥器にて水流ポンプの陰壓により 24-48 時間乾燥し、それを乳鉢で細にすりつぶし粉末となし褐色硝子アンプルに封入し 4-6°C の冷蔵庫に入れて保存す。

一部は先年用ひた材料を再び試験す。

保存日数 118 日-962 日のもの 12 種を選び約 0.3 g 宛まり、各 0.85 % 食鹽水で薄め 10.0 cc の乳劑となす。別に家雞卵孵化 9-10 日目の家雞胎 13 箇を細

第 1 表 第一實驗 14/X 1932

| 乾燥材料番 | 料號 | H. 50 | H. 69 | H. 168 | H. 183 | H. 214 | H. 169 | H. 188 | H. 222 | H. 227 | H. 228 | H. 233 | H. 259 | 合計 | 百分率 |
|------------|-----|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|-----|
| 保存日數 | | 962 | 779 | 614 | 569 | 540 | 502 | 476 | 423 | 362 | 358 | 280 | 118 | | |
| 乾燥材料 | ウエ數 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 33 | 42% |
| | ツイ數 | 0 | 0 | 1 | 0 | 3 | 0 | 3 | 2 | 0 | 1 | 1 | 3 | 14 | |
| 乾燥材料 + 家鷄胎 | ウエ數 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 33 | 91% |
| | ツイ數 | 3 | 2 | 3 | 3 | 3 | 1 | 3 | 2 | 2 | 2 | 3 | 3 | 30 | |

第二實驗 16/XI 1932

| 保存日數 | | | 647 | 602 | 573 | 535 | 509 | 456 | 395 | 391 | 313 | | |
|--------------------------|-----|--|---------|--------|---------|---------|---------|---------|--------|--------|--------|----|-----|
| 乾燥材料 | ウエ數 | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 18 | 44% |
| | ツイ數 | | 2 ++ | 0 | 2 ++ | 0 | 2 ++ | 2 ++ | 0 | 0 | 0 | 8 | |
| 乾燥材料 + 家鷄胎乾 燥粉末 | ウエ數 | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 27 | 41% |
| | ツイ數 | | 3 ++ | 0 | 2 + | 1 + | 2 ++ | 3 ++ | 0 | 0 | 0 | 11 | |
| 乾燥材料 + 家鷄胎 | ウエ數 | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 27 | 74% |
| | ツイ數 | | 3 ++ | 1 + | 3 ++ | 3 ++ | 3 ++ | 3 ++ | 1 + | 2 + | 1 + | 20 | |

第三實驗 27/XII 1932

| | | | | | | | | | | | | | | | |
|------------|------|-----|-----|---|-----|-----|-----|---|-----|-----|-----|---|--|----|-----|
| 保存日數 | 1036 | 853 | 688 | | 614 | 576 | 550 | | 436 | 432 | 354 | | | | |
| 乾燥材料 + 家鷄胎 | ウエ數 | 3 | 3 | 3 | | 3 | 3 | 3 | | 3 | 3 | 3 | | 27 | 37% |
| | ツイ數 | 1 | 1 | 3 | | 2 | 1 | 2 | | 0 | 0 | 0 | | 10 | |
| 乾燥材料 + 家鷄胎 | ウエ數 | 3 | 3 | 3 | | 3 | 3 | 3 | | 3 | 3 | 3 | | 27 | 74% |
| | ツイ數 | 3 | 2 | 3 | | 2 | 2 | 3 | | 2 | 2 | 1 | | 20 | |

+ : 移植腫瘍の増殖程度

にきざみ乳鉢ですりぶして粥状となし食鹽水を加へて2倍に薄める。乾燥材料の乳劑半分即ち5ccに家鷄胎粥5ccをきよく混合し、3羽の家鷄左の翅、胸、下肢何れか一ヶ所宛筋肉に注射し、對照としてそれに相當した右の翅、胸、下肢に残り5ccの乾燥材料乳劑のみを注射す。彼様にして12羽の家鷄に各材料を移植す。移植後1週間にして乾燥材料家鷄胎混合移植の部即ち左翅、胸、下

肢の筋肉内には大多數稍々硬い腫物を觸れるが、對照の右側には殆ど何も觸れない。右側の腫物は速に増大し 17 日目には鶏卵大に肥大するものが多いにも拘らず右側は陰性のもの多く、陽性のものあつても大豆大、雀卵大なり、

家鶏は移植後 16-39 日で腫瘍の爲たをれ、轉移は肺、心、脾、腎、胃等に見らる(但し 1 羽は 4 日目にて死す故除外す)。

移植成績は第 1 表の如く家鶏胎を加へた場合は移植率非常に良く、植た數 33 に對しついた數 30 即 91 % の陽性率を示して居るが、對照に於ては僅か 42 % である。又腫瘍の増殖力も強く、大きさが對照の 10 倍 20 倍に達するもの多し。特に興味ある事實は乾燥材料 H. 50, H. 69, H. 183, H. 169, H. 227 號種等にして、鶏胎を加へた場合には植へた數全部又は一部は必ず陽性を示すにも拘らず對照に於ては全く陰性に終る。

第二實驗(對照、鶏胎粉末混合移植)

乾燥材料は第 1 實驗に用ひたるものと同一、保存日數 313 日—147 日のもの 9 種を選び約 0.3 g 宛をり、食鹽水で薄め各 8. cc の乳劑を作りその 2cc 宛をり家鶏 3 羽 18 ケ所(一種の材料に就き二ケ所宛)に移植す。残り 6 cc の乳劑を二等分してその 3 cc は家鶏卵孵化 10 日目の家鶏胎 18 箇を粥狀となし食鹽水を加へ薄めたものゝ一部ををり、これに良く混じ第 1 實驗と同様 9 羽 9 羽の家鶏の左翅、胸、下肢の筋肉内に注射す、他の半分 3cc は家鶏卵孵化 10-14 日目の家鶏胎 11 箇を肉腫乾燥材料と同一方法により乾燥粉末となし、これに食鹽水を加へて乳劑にしたものゝ一部ををり混合して前と同様右側翅、胸、下肢等に注射して對照となす。

第 1 實驗と等しく家鶏胎を加へて移植した左側は 5-7 日にして觸知しうる腫物認められるが、家鶏胎乾燥粉末を加へて移植した右側及び乾燥材料のみ移植した家鶏に於ては殆ど何も觸知しえず、17 日目には前者は鶏卵大に腫脹するも後者對照例は陽性少なく大豆大雀卵大に觸れるのみ。

14日—41日で腫瘍の爲大部分はたをれ轉移も多く見らる、家鶏胎を加へた場合には總ての乾燥材料に就き陰性を示すもの 1 種もなく 74 % の陽性率を示し、腫瘍増殖力も非常に良好なり。對照例に於ては陽性率低く 41 % から 44 % に

てその増殖力も弱く H. 183, H. 277, H. 288, H. 233 號種は全く陰性である。

第三實驗 (對照家鴨胎混合移植)

乾燥材料は第 1 實驗に用いたもの、保存日数は 354 日—1036 日のもの 9 種を選び前と同様乳剤を作り、その半分を家鶏卵孵化 11 日目の家鶏胎 14 箇を粥狀にしたものに加へ家鶏左側翅、胸、下肢の筋肉内に注射し、他の半分を家鴨卵孵化 11 日目の家鴨胎 12 箇を粥狀にしたものに加へて家鶏右側翅、胸、下肢等に注射して對照とす。

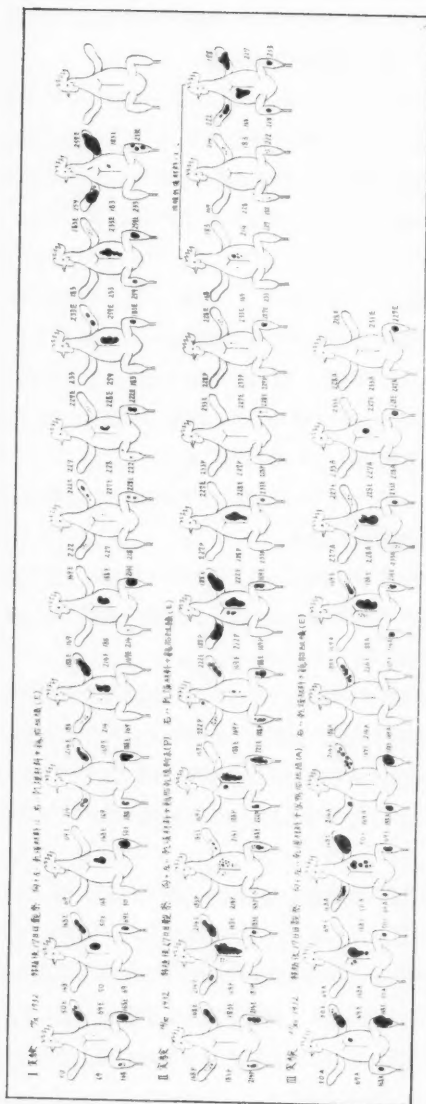
9 羽の家鶏中 6 羽は腫瘍の爲にたをれ、H. 227, H. 228, H. 233 號種移植の 3 羽は始め腫瘍陽性なりしが吸収されて生存す。鶏胎を加へた場合は第一、第二實驗と同様移植陽性率高く 74% を示し、腫瘍の増殖力も良好である。家鴨胎を加へた對照に於ては移植率悪く、乾燥材料のみ移植した結果と略々等しく 37% の陽性率を示し、腫瘍増殖速度も遅く、H. 227, H. 228, H. 233 號種は全く陰性、H. 50, H. 69, H. 169 號種は僅一ヶ所宛陽性を示すのみ。

顯微鏡的所見

3 回の實驗を通じて見るに何れも移植腫瘍の性質は、略々同様にして紡錘形細胞に圓形細胞を混じ粗糲にして粘液性のものなり、新鮮家鶏胎を加へた場合は時に細胞が大きく圓形細胞が多少多い様に思はる。

胎兒組織に就て觀察するに家鶏胎乾燥粉末を加へたものは壞死した軟骨組織、色素顆粒等僅か残るのみで胎兒組織の増殖した形跡なし。家鴨胎を加へた場合その増殖は少ないが 4-5 例に於て腫瘍組織は増殖力弱く遅いにも拘らず、軟骨が島狀に腫瘍組織の内外に良く増殖してゐる。色素細胞、淋巴球浸潤等も見らる。

新鮮家鶏胎を加へた場合は腫瘍の増殖盛にして中心は壞死に陥り易く、肉眼的に軟骨様物質が腫瘍の中に散在してゐる。顯微鏡的に見るに胎兒組織即軟骨、骨、扁平上皮及びその角化、上皮細胞の腺狀構造をなす部又は囊腫狀をなすものが腫瘍組織に支へられて散在し、腫瘍細胞と直接相接し骨、軟骨等次第に肉腫細胞により破壊吸収されてゐる處も見らる。尙褐色色素をこつた細胞も處々に散在してゐる。腫瘍移植陰性の場合には胎兒組織は軟骨を



中心に色々の組織が良く増殖し壊死萎縮する傾向少ない。

總括

本實驗に於ては移植腫瘍が陽性として表はれる時期は殆ど移植後 15 日前後の様に思はれるので、移植後 17 日目の觸知しえた腫瘍の大きさを第 2 表に示したのである。向て右側が鶏胎混合移植、左側がその對照であつて如何に右側が左對照に比してその陽性率、増殖力の良好であるかがはつきりさ解る。尙肥大した腫瘍が胎兒組織の増殖によるものでなく、肉腫組織の増殖によるこは肉眼的及び顯微鏡的検査により明かである。

死後顯微鏡的検査を行ひその陽性率を數字で表したのが第 1 表であるが、乾燥材料鶏胎混合移植の場合にはその移植率高く 74 % から 91 % を示し、腫瘍の増殖肥大も非常に速にして、何

れの實驗に於ても各材料に就き 1000 日以上保存のものでも三ヶ所移植の中少くとも一ヶ箇所は常に陽性を示してゐる。しかるに對照としての乾燥材料のみ移植、家鶏胎乾燥粉末混合移植及び家鴨胎混合移植等の場合には何れも等しく移植率非常に悪く 37%—44% の間にあり、腫瘍の増殖力も弱く殊に H. 183, H. 227 號種は常に陰性、H. 50, H. 69, H. 169, H. 228, H. 233 號種等もよく陰性に終りし事がある。

如斯乾燥材料に新鮮家鶏胎組織を混合して移植した場合何故陽性率が高く増殖力が強い。

先づ乾燥材料中に生活細胞ありと假定するならば Deelman が新鮮なる家鶏肉腫に家鶏胎組織を加へ移植して腫瘍増殖の良好なることを述べ、又向山、八木の兩氏が同様家鶏胎、家鴨胎、鳩胎等を加へて家鶏に移植し腫瘍の増殖力が對照に比し非常に良好なりと云つて居る様に、これらの實驗から考へて、乾燥材料中の細胞に胎兒組織が栄養物として作用し或は胎兒組織が血管を引付ける力ある爲に、それが腫瘍細胞増殖に良い状態を與へるものとも想像出来る。故に組織培養に栄養物として用ふる家鶏胎乾燥粉末を混合して移植したのであるが殆ど影響なく、又家鴨胎混合移植を試みてもやはりその胎兒組織増殖あるにも拘らず腫瘍の陽性率及び増殖力には影響がなかつた。

私共は先年の實驗により乾燥材料中には生活細胞なく、ある腫瘍起原があつて、これを家鶏に移植するにその家鶏の結締織性細胞が腫瘍起原の影響を受けて腫瘍細胞化するもので、丁度細胞のない腫瘍濾過液を注射して腫瘍の生ずるの全く同一のものなりと信じてゐる。こう云ふ立場から觀察するに新鮮なる家鶏胎組織を混合して移植した場合には、胎兒組織は種々なる刺激に對して變化し易いものである故、腫瘍起原の力が弱く成熟家鶏の stabil な結締織性細胞を腫瘍化する力なくとも、labil なる家鶏胎の結締織性細胞に働き腫瘍化する爲に、陽性率が對照に比し非常に高まつたのではないかと思はれる。恰も Carrel 及び White がタール、砒素、インドール等家鶏胎組織を混じて移植し肉腫を作り、Peyton, Krotkina が大黒鼠胎兒に砒素を加へて大黒鼠の腹腔内に移植し、癌腫を作つたのと同じ意味をもち、乾燥

材料中にある腫瘍起原は前記の化學物質に相當し、ある刺激を胎兒組織に與へるものである。唯異なる點は化學物質は動物の種類を問はず又上皮性のもの、結締織性のもの何れにも作用し、ある時は癌或る時は肉腫性に變化さすものであるが、家鶏肉腫乾燥材料中の腫瘍起原は家鶏の結締織性細胞のみに働き肉腫化するはずきりした特異性を有す。おそらく腫瘍細胞の核又は原形質の一部が細胞から分離して存在し、其物は特異性として家鶏、結締織性細胞のみに作用して腫瘍細胞化するのであると考へらる。その場合核分裂し易き即ち發生期にある鶏胎と云ふことが意味あるのであつて、通常細胞には容易に惹起し得ざる核分裂の變調が胎組織なるか故に易く起したるものと想像せらるべく、即ち核染色體の變調が腫瘍發生に關係あることを推察せしむ。

結 論

- 1) 家鶏肉腫乾燥材料を硝子アンブールに封入して冷蔵庫に保存する時は、1000 日以上経過するものも尙移植能力を有す。
- 2) 乾燥材料家鶏胎混合移植の場合、移植率非常に高く 74 % から 91 %、乾燥材料のみ又は家鶏胎乾燥粉末混合、家鶏胎混合移植の場合には移植率低く 37 % から 44 % の間にある。
- 3) 乾燥材料中にある腫瘍起原は家鶏胎と混合移植するに labil な胎兒組織を腫瘍化する爲陽性率高く、其他の場合には移植した成熟家鶏の stabil な組織を腫瘍化する爲陽性率低い様に思はる。

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家鶏肉腫起原と眼球に就て

名古屋醫科大學病理學教室

大 島 福 造

藪 内 好 夫

Studien über die Hühnergeschwülste.

19 Mitteilung.

Beziehungen zwischen dem Agens des Hühnersarcoms und dem Auge.

Von

F. Oshima und Y. Yabuuchi.

Aus dem Pathologischen Institut der Medizinischen Fakultät zu Nagoya.

(Vorstand; Prof. T. Kimura.)

Es ist schon durch die von verschiedenen Autoren sowie durch meine eigenen Untersuchungen nachgewiesen worden, dass sich in den Hühnerkörpern, in welche ein Hühnersarcom implantiert worden war, ein Agens nicht nur in den implantierten Lokalitäten befindet, sondern dass es sich auch im ganzen Körper verbreitet hat.

In diesen Untersuchungen haben wir die Probe gemacht, ob sich bei Hühnern nach der Geschwulstimplantation das Agens der Geschwülste auch in den Hühneraugen verbreitet und überträgt. Dabei konnte man sowohl makroskopisch als auch mikroskopisch keine Geschwülste als Metastase beobachten. Implantierte man aber die betreffende Augenemulsion in andere gesunde Hühner, so konnte man in 34.09% der Fälle eine Geschwulstentwicklung feststellen.

Beobachtet man die verschiedenen Gewebestellen, bei denen das Agens zahlreich anzutreffen war, so zeigt sich folgende Anordnung: zuerst Corpus vitreum, dann Iris und Corpus ciliare und

zuletzt Retina.

Auf grund obiger Tatsache konnte nachgewiesen werden, dass das Agens der Geschwülste auch auf die Augen übertragen wurde.

Die Untersuchungen über die Implantation der Geschwülste in die im Brutofen auf bewahrten Eier, von denen die Augenemulsion des auf diese Weise entwickelten Hühnerembryos in die gesunden Hühner eingepflegt wurde, zeigen ein 6.67% tiges positives Implantationsresultat.

Zum Schlusse führten wir folgende Untersuchungen durch. Bei den zuerst mit Geschwülsten subkutan eingepflegten Hühnern wurde in die Augen *Lycopodium* als Fremdkörper eingeführt, um festzustellen, ob sich an dieser Stelle eine sekundäre Wucherung des Geschwulstes entwickeln würde. Die Untersuchungen brachten jedoch nicht die erwarteten Resultate.

(1) 緒 言

同種或は異種動物の眼球内に腫瘍の移植實驗を行つた學者は既に多數にあるが(KLONCKE, JÜRGENS, HEGNER, RUBEN, HAPPE, 長與, 和合, 盛氏等)其の成績は區々である.然し地の部位へ移植するよりも少くとも移植不良な成績は何れの報告を觀ても存在しない.異種動物腫瘍の移植さても,文獻の示すが如く腦内移植(白井氏等其他)の如き良好な成績は得られないけれども,多少とも眼球内で増殖を認めた學者はある(JÜRGENS 其他).私も曾て家鶏肉腫を家鳩の前房内へ移植し又白鼠肉腫を家兎の前房内へ移植して極めて僅微であるが増殖を認めた事がある.是等の實驗から私は眼球内は異種動物腫瘍の移植選擇部位として今日尙ほ深く研究さる可き一部位であると思つて居る.

家鶏の肉腫を家鶏の眼球内へ移植した實驗は大正6年に盛氏が藤浪, 稻本系肉腫を以てなされたに初まる.同氏は眼球内へ家鶏肉腫を移植するに網膜

瓣によく腫瘍の増殖する事を認められた。大正 15 年私は三尾氏と共に家鶏肉腫の同種動物眼球内移植を行つて腫瘍組織の發育陽性と共に眼球内色素細胞の添加増殖のある事をも認め、之れは今氏の烏骨鶏への家鶏肉腫移植實驗の成績と同一に見做さるべき成績である事を追記した。更に昭和 4 年大野氏は多數の家鶏に就て眼球内移植を試みて 76.9 % の陽性率を得、脈絡膜は腫瘍増殖の最好發部位であるを指適し、虹彩、毛様體、網膜、角膜にも腫瘍組織の侵入増殖する事あるを認められた。次に家鶏肉腫の自然轉移に就ては各臟器組織何れを問はず多數に認められた文獻があるが、眼球内轉移は皮下移植時或は靜脈内注射時共に家鶏肉腫にあつては稀であり、私は 10 數年來の各種の實驗上未だ經驗した事がない。然し家兎肉腫に於ては、鞏膜、虹彩に時に證明する事がある。

以上の文獻及私達の實驗成績を觀ても特に眼球内であるが爲に、腫瘍の増殖の高度である云ふが如き特種の關係は認められ得ないが、少なくとも他の部位と同一成績であるか或は多少とも發育が良好であるとは云ひ得る成績である。

家鶏肉腫の起原が何者であるかは未だ決定されて居ない。現今學界に於ける大きな謎の一つである。一たび家鶏肉腫組織或は其の濾過液を家鶏體內へ移植するに其の部位に腫瘍の形成される事は勿論であるが、腫瘍の起原は決して其の局所のみに限られて存在するのではない、數日ならずして全身に蔓延する。之れは肉眼的及組織學的に腫瘍組織或は細胞を證明せなくとも臟器、組織を採て他の家鶏へ移植するに原種と同様な組織の腫瘍を發生せしめ得る事に據て明白である(藤浪、鈴江、大島、大田氏等)。之れは常に臟器、組織のみならず體液内に於ても同様の事實が證明されて居る。假令ば MURPHY 氏は腫瘍家鶏の腹水を又私は卵巢囊腫を有する家鶏へ家鶏肉腫を皮下移植して其の囊腫液中に、八木氏は腫瘍家鶏の涙に、大田、波多野氏等は尿中に、PENTIMALLI、大田、園田氏等は血漿中に腫瘍起原の存在を證明し、又大島、FRÄNKEL 氏は雌家鶏の卵黃中に起原の保有を認めて居る。即ち腫瘍移植家鶏に於ては全身に互て腫瘍起原が分布されて居る事は以上の實驗に據て觀れ

ば疑のない處である。然し其の腫瘍起原分布の濃淡強弱には多少の差異があり、藤浪氏、大島は肺臓に最も多く、私は卵巢が夫れに次で多量に保有される事を認めて居る。然し未だ實驗を経られて居ない臓器、組織が多々ある。

凡そ腦組織や眼球組織、睪丸等は体内の一般臓器組織とは多少異なつた性質があつて、病原體不明の疾病の檢索には毎に其の檢索部位の一つとして用ひられて居る。恙蟲病、痘瘡、發疹 TYPHUS 等の病原體の研究には、眼球、睪丸等が旺んに移植實驗部位として用ひられる。従つて起原不明の家鶏肉腫にあつては、この部位との關係如何、即ち、起原の存在竝に濃淡程度、組織の反應等は是非とも調査せられなくてはならない問題である。既に睪丸腫瘍起原との關係に就ては私達の實驗成績を報告した事があり、腫瘍起原は卵巢には殊に多く又好んで保有されるが、睪丸組織内には僅微か或は陰性である。今回は腫瘍家鶏の眼球に關した成績の概要を述べて、今後の起原問題攻究の一資料に供したいと思ふのである。

(2) 實驗方法竝に材料

私達實驗の方法は家鶏肉腫を家鶏の皮下へ移植して一定度の大きに達し斃死を待ち、又は瀕死時の家鶏の眼球を剔出して、之れを生理的食鹽水にてよく洗淨し、第一には眼球組織の殆んど全部を共に細剪し、之れの乳劑を健康なる家鶏の皮下に移植して腫瘍發生の如何を觀察し、次で眼球の何れの部位が腫瘍起原に特に親和性を有するかを檢せんが爲に各成分を分割して各々組織の移植實驗を行つた。剔出した眼球を眼球結膜部より直ちに太き注射針に據て濃厚透明なる硝子體液を吸引して、之れを移植の一材料となし、次で角膜を角膜輪から切除し、虹彩毛様體を共に採取し、水晶體を採り出し、後網膜嚢と共に網膜、脈絡膜を鞏膜組織から剝離して其の各々を別ちて移植材料とした。材料には血液の混入を可及的避け且つ硝子體液は透明なもののみを使用した。材料とした家鶏の中には腫瘍の増大に據て、時に眼瞼は浮腫、發赤し涙液の分泌過多を呈して居た例がある。これは腫瘍發育による衰弱の一兆候とも見做し得られる。私達の用ひた動物の中には Hühner-rup 竝に其他寄生蟲の寄生して居たものは勿論廢棄した。材料を採つた動物は何れも體

重 700-1000 瓦のもので、白色 Leghorn、名古屋種の雄である。

次に孵化家鶏卵に腫瘍を移植して卵膜に腫瘍の發育陽性であつたものゝ胎盤の眼球を剔出して之を移植し、又腫瘍家鶏の眼球内へ異物を挿入して腫瘍が其の周囲に特發するか否かをも檢した。

以上の實驗と共に腦組織の移植を試み又他の内臟臓器の移植を行つて起原存在に對する對照實驗もなした。私達の用ひた家鶏に於ては眼球内に腫瘍轉移を肉眼的及一部分の組織學的檢査上證明したものは勿論ない、眼球を剔出する時に於ては皮下に發育した腫瘍組織には全然接觸せず、且つ原種腫瘍組織面の潰瘍狀となつて居たものは起原混入の恐れあるが故に排除した。

(3) 實驗成績

第1 腫瘍家鶏の眼球移植實驗

家鶏肉腫を皮下へ移植した家鶏の斃死を俟ち或は瀕死時に眼球を剔出し、之れを(軟骨、骨等をも共に)細剪し乳劑をなし他の健康なる家鶏の皮下組織内へ移植したのである。而して得た成績を簡單に表示するに次の如し(第1表)。本實驗に用ひた家鶏眼球には肉眼的は勿論一部の組織學的檢査上にも腫瘍細胞を認めて居ない。

第1表 腫瘍家鶏眼球移植實驗成績 昭和5年9月24日始め
昭和5年12月末終る(實驗例22羽)

| 實驗 回数 | 移植月日 | 原種移植 後の日数 | 材料採取時 の原種腫瘍 の大きさ | 眼の症狀 の有無 | 眼球の所 見 | 眼球 移植 数 | 陽性 数 | 備 考 |
|----------|---------------|--------------|------------------------|--------------|-----------|---------------|---------|----------------------------|
| 1 | 昭和5年 9月24日 | 38日 | 左 鶏卵大 右 " | 羞明、涙 分泌過多 | 結膜充血 | 6 | 1 | 轉移竈なし 鬱血、肺移植 二個(⊕) |
| 2 | " 2日 | 29日 | 左 小鶏卵大 右 " | 鬱 血 | 結膜充血 | 8 | 4 | " 鬱血、肺移植 二個⊕ |
| 3 | " 6日 | 51日 | 左右とも廣汎 胸壁 | 眼瞼腫脹 鬱血 | 瞼水腫充 血 | 4 | 0 | 二個移植の一 例は比較的早 期に衰弱斃死 |
| 4 | " 8日 | 23日 | 左 鶏卵大 右 梅實大 | 無 | 角膜微濁 | 4 | 4 | |
| 5 | " 13日 | 30日 | 左右とも廣汎 胸壁 | 無 | 充 血 | 4 | 0 | |
| 6 | " 14日 | 31日 | " | 無 | — | 4 | 2 | 轉移竈なし 鬱血、肺移植 二個⊕ |

| | | | | | | | | |
|---|--------|--------|------------------|----------------------|--------------------|----|----|-----------------|
| 7 | 11月15日 | 32日 | 左 小鶏卵大 右 胡桃大 | 眼瞼腫脹 差明、涙 分泌過多 | 眼瞼水腫 状、結膜 充血 | 4 | 4 | |
| 8 | 12月5日 | 18日 | 左 母指頭大 右 小鶏卵大 | 無 | — | 4 | 0 | |
| 9 | 12月6日 | 19日 | 左 胡桃大 右 ” | 無 | — | 6 | 0 | 甚しく衰弱、 但轉移なし |
| 計 | | 18—51日 | 母指頭大 胸壁廣汎 | | | 44 | 15 | 34.09 % |

上表に見るが如く私達の實驗は秋期及冬期に互て實驗したものであつて家鶏肉腫としては發育の佳良な季節であるが、眼球組織移植に據ては僅かに34.09 %の腫瘍發育陽性成績を得て居る。之れを他の臓器の移植實驗に比較するに材料及腫瘍移植後の日数共に、相當腫瘍起原保育に對して濃厚である可き時期であるに拘はらず、この成績は特に佳良と云ふ事は出来ない。臨牀上に眼の症狀として涙液分泌過多のあつたもの2例があるが、斯るものに於てはよく腫瘍の發生を認めて居る。之れは何か關係があるやうにも思へるが明かでない。

第2 腫瘍家鶏の腦組織移植實驗

本實驗は對照の目的で行つた實驗である。私は既に昭和2年に腫瘍家鶏の腦組織の移植を行つた事があるが、この時は全部陰性であつた。然し本回の實驗では下表の如く30.0%の陽性を得て居る(第2表)。腦には肉眼的には勿論、組織學的に腫瘍轉移或は圓形細胞浸潤、出血等何れも證明しない。又臨牀上にも何等腦症狀を現して居ない。

上表示すが如く前項に述べた眼球移植の陽性例は腦組織移植に據ても亦同様陽性である。斯かる腫瘍家鶏の腦移植の實驗は最近 COSTA 氏の實驗もあるが、之れは亦私達と同様に肉眼的組織學的に轉移を證明しなくても腫瘍起原の存在を實驗的に證明して居る。

家鶏肉腫の腦内移植を行つたのは大正10年私が初めて實驗し、後二本松氏は之れを臨牀的に觀察し、其後新井氏に據て詳細に檢せられ又最近釜本氏に據ても實驗されて居るが何れも移植が佳良であつて、腦は腫瘍發育に對し拮

抗的に働く組織でない事は明瞭である。

第2表 腫瘍家鶏の脳組織移植實驗成績 昭和5年9月24日始め

昭和5年12月末終る(實驗例10羽)

| 實驗 回数 | 移植月日 | 原種移植 後の日数 | 材料採取時 の原種腫瘍 の大きさ | 腦の所見 | 移植 個数 | 陽性 数 | 備 考 |
|----------|----------------|--------------|------------------------|------|----------|---------|-----------|
| 1 | 昭和5年 9月24日 | 38日 | 左 鶏卵大 右 .. | 腦膜變血 | 4 | 2 | 眼球移植六個1⊕ |
| 2 | 昭和5年 11月6日 | 51日 | 左右とも廣 汎胸壁 | 無 | 4 | 0 | 眼球移植四個⊖ |
| 3 | 昭和5年 11月8日 | 23日 | 左 鶏卵大 右 梅實大 | 無 | 2 | 2 | 眼球移植四個全部⊕ |
| 4 | 昭和5年 11月13日 | 30日 | 左右とも廣 汎胸壁 | 無 | 4 | 2 | 眼球移植四個⊖ |
| 5 | 昭和5年 12月5日 | 18日 | 左 母指頭大 右 小鶏卵大 | 無 | 2 | 0 | 眼球移植四個⊖ |
| 6 | 昭和5年 12月6日 | 19日 | 左 胡桃大 右 .. | 無 | 4 | 0 | 眼球移植六個⊖ |
| 計 | | 18-51日 | 母指頭大一 胸壁廣汎 | | 20 | 6 | 30.00 % |

第3 腫瘍起原存在の眼球内各組織の部位的關係

敘上の如く眼球移植に據て眼球内に腫瘍起原の存在を明かに證明したが、眼球内何れの部位に最もよく存在するか又其の分布の濃淡如何に就て檢索を行つた。彼の恙蟲病の如きは眼球内に於ても DESCMET 氏膜に Rickettsia がよく發育し、又秋疫、WEIL 氏病等の硝子體濁濁も私等の研究に據れば毛様體に Spirochaeta を證明し、之れに據る 炎性産物の硝子體に發現するが爲なる可く、結核、癩等も亦角膜、鞏膜、虹彩に限局性病竈をよく發生し、痘瘡も亦角膜に於て最もよく變化を惹起する。家鶏肉腫に於ては是等の問題は如何に次の實驗を行つた。材料の採取に當ては前に記載した方法を用ひ他この混入を可及的避けしめた。

第3表 腫瘍家鶏の眼球各部組織移植實驗成績 昭和6年1月

7日始め昭和7年1月終る(實驗例62羽)

| 實驗 回数 | 移植月日 | 材料採取時 の原種腫瘍 の大きさ | 眼の症狀 有無 | 眼球内の移 植組織部位 | 移植 個数 | 陽性 数 | 備 考 |
|----------|--------------|------------------------|------------|----------------|----------|---------|------|
| 1 | 昭和6年 1月7日 | 兩側とも鶏 卵大 | 無 | 角 膜 | 4 | 0 | 轉移なし |
| 2 | " | " | " | 虹彩及毛 様體 | 4 | 0 | |

| | | | | | | | |
|----|---------------|--------------|---------------|--------------|---|---|-----------------|
| 3 | „ | „ | „ | 水晶體 | 4 | 0 | |
| 4 | „ | „ | „ | 硝子體 | 4 | 0 | |
| 5 | „ | „ | „ | 網膜瓣 | 4 | 0 | |
| 6 | „ | „ | „ | 脈絡膜及 網膜眼底 | 4 | 0 | |
| 7 | „ | „ | „ | 視神經 | 4 | 0 | |
| 8 | 昭和6年 1月15日 | 兩胸壁廣汎 性 | 眼瞼腫脹 流淚過多 | 角 膜 | 4 | 0 | 轉移竈なし |
| 9 | „ | „ | „ | 虹 彩 | 4 | 4 | |
| 10 | „ | „ | „ | 硝子體 | 4 | 4 | |
| 11 | „ | „ | „ | 眼底網膜 及網膜瓣 | 4 | 2 | |
| 12 | 昭和6年 1月19日 | 全胸廣汎性 | 無 | 角 膜 | 4 | 2 | |
| 13 | „ | „ | „ | 虹 彩 | 4 | 2 | |
| 14 | „ | „ | „ | 硝子體 | 4 | 2 | |
| 15 | „ | „ | „ | 網膜眼底 網膜瓣 | 4 | 0 | |
| 16 | „ | „ | „ | 水晶體 | 4 | 0 | |
| 17 | 昭和6年 1月21日 | 左鶏卵大 右胡桃大 | 無 | 角 膜 | 4 | 0 | |
| 18 | „ | „ | „ | 虹 彩 | 4 | 0 | |
| 19 | „ | „ | „ | 硝子體 | 4 | 2 | |
| 20 | „ | „ | „ | 眼底網膜 網膜瓣 | 4 | 1 | 早く死、解剖に よる成績 |
| 21 | „ | „ | „ | 視神經 | 4 | 2 | „ |
| 22 | 昭和6年 2月3日 | 記載なし | 鬱 血 | 角 膜 | 4 | 2 | |
| 23 | „ | „ | „ | 虹 彩 | 4 | 2 | |
| 24 | „ | „ | „ | 硝子體 | 4 | 2 | |
| 25 | „ | „ | „ | 眼底網膜 網膜瓣 | 4 | 2 | |
| 26 | 昭和6年 2月4日 | 兩側とも鶏 卵大 | 眼瞼水腫狀 羞明流淚 | 角 膜 | 4 | 0 | |
| 27 | „ | „ | „ | 水晶體 | 4 | 0 | |
| 28 | „ | „ | „ | 硝子體 | 4 | 0 | |
| 29 | 昭和6年 2月9日 | 左全胸 右鶏卵大 | 眼裂閉鎖 | 角 膜 | 4 | 0 | |

| | | | | | | | |
|----|----------------|-----------------|-------------|-----|---|---|------------------|
| 30 | 昭和6年 4月23日 | 左大鶏卵大 右鶏卵大 | 無 | 角 膜 | 4 | 2 | |
| 31 | 昭和6年 7月28日 | 全胸左右とも 空洞狀増殖 | 眼裂閉鎖 水腫狀 | 角 膜 | 4 | 1 | |
| 32 | 昭和6年 10月14日 | 全胸増殖 | 羞明涙分 泌多し | 角 膜 | 4 | 0 | |
| 33 | 昭和6年 11月24日 | 左大鶏卵大 右鳩卵大 | 無 | 角 膜 | 4 | 0 | 早期斃死。解剖 による成績 |
| 34 | 昭和6年 11月30日 | 左大鶏卵大 右小鶏卵大 | 無 | 角 膜 | 4 | 2 | |
| 35 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 36 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 37 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 38 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 39 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 40 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 41 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 42 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 43 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 44 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 45 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 46 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 47 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 48 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 49 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 50 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 51 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 52 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 53 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 54 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 55 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |
| 56 | 昭和6年 11月26日 | 全胸瀰蔓性 | 無 | 角 膜 | 4 | 0 | |

| | | | | | | | |
|----|----------------|--------------|----------------|------------|---|---|--|
| 57 | 昭和6年 11月30日 | ” | 無 | 眼底及網 膜癰 | 4 | 0 | |
| 58 | ” | ” | ” | 視神經 | 4 | 0 | |
| 59 | 昭和6年 12月15日 | 全胸壁に互 り増殖 | 無 | 硝子體 | 4 | 2 | |
| 60 | ” | ” | ” | 網膜、網 膜癰 | 4 | 0 | |
| 61 | ” | ” | ” | 視神經 | 4 | 0 | |
| 62 | 昭和6年 12月19日 | 左右とも鳩 卵大 | 眼瞼水腫狀 眼裂閉鎖す | 視神經 | 4 | 0 | |

上表を更に簡単にせば次第の如し(第4表)。

第4表 腫瘍家鶏の眼球組織移植實驗成績概括(實驗例62羽)

| 移植材料 | 回數 | 移植數 | 陽性數 | 陽性率 |
|----------------|----|-----|-----|---------|
| 角 膜 | 13 | 52 | 9 | 17.31 % |
| 虹 彩 及 毛 樣 體 | 10 | 40 | 18 | 45.00 % |
| 水 晶 體 | 4 | 16 | 0 | 0 |
| 硝 子 體 | 15 | 60 | 28 | 46.67 % |
| 眼底網膜 網膜癰 | 15 | 60 | 18 | 30.00 % |
| 視 神 經 | 5 | 20 | 2 | 10.00 % |
| 合 計 | 62 | 244 | 73 | 29.96 % |

45.0 %の陽性であり、角膜、視神經に至りては極めて低く、水晶體は私達の實驗では悉く陰性に終て居る。眼底及網膜癰に於ては實驗の示すが如く30 %陽性である。即ち、硝子體、毛樣體部は最も腫瘍起原に關係深く、又特に Rickettsia 等の疾患に於ては角膜裏面の Descemet 氏膜に特に發育顯著なる關係があるやうであるが、本實驗に於ては角膜に却て起原の存在が少なく、硝子體內には起原を多量に有するが特に濁濁等を認めず、又毛樣體、虹彩の切片標本を多數に檢するも鬱血あるの外に、腫瘍細胞の存在や炎症像の發現を認め得たものが一例もない。色素細胞及固定細胞にも増殖像を認めない。

以上の成績に據て觀るに硝子體、虹彩、毛樣體は眼球中に於ても腫瘍起原

私達の實驗は合計62回、移植數244個で、陽性を示したものが73個 即ち29.96 %に相當する。之れを眼球全部を細切移植した第一の成績と比較するに低下して居るが、本實驗には細かに部分組織の分離を行つた爲に、この操作中に幾分起原の消失を免かれなためであらうと思ふ。私達の成績を以て觀れば硝子體46.67 %、虹彩、毛樣體移植は

濃厚に保有する組織である云ふ事が出来やう。視神経に於て 10.0 %陽性を認めたが、こは少數の實驗及陽性率であつて確實には言明し能はない。然し前項腦の實驗成績と對照して興味ある處であらう。

第4 孵化家鶏卵内移植により卵膜に腫瘍の發育陽性例の胎雛眼球移植實驗

私は既に數回に亙て家鶏肉腫を孵化家鶏卵内に移植して卵膜に腫瘍發育の陽性なるものゝ胎雛、及之れから得た雛の臟器及組織には起原を保有し、往々胎雛は「死に籠り」を形成し初生雛の發育は不良である事を報告した。斯る實驗を基礎として私達は前項と同様な事項を該法に據つて實驗し次表の如き成績を得て居る(第5表)。

第5表 孵化卵内腫瘍移植による胎雛眼球移植實驗成績 昭和2年
5月初め昭和2年7月末終(實驗例15羽)

| 實驗 回数 | 移植後 の孵化 卵日數 | 移植月 日及破 壞月日 | 卵膜腫瘍 | 胎雛眼 症狀 | 眼球 移植 數 | 陽性 數 | 備 考 |
|----------|-------------------|-------------------|-------|-----------|---------------|---------|-------------------|
| 1 | 5 日 | 昭和2年 5月20日 | ⊕ | 無 | 4 | 0 | 肝、肺臟移植⊖ |
| 2 | 5 日 | .. | ⊕ | 無 | 2 | 0 | 肝、肺臟移植⊖ |
| 3 | 5 日 | .. | ⊖ | 無 | 2 | 0 | 肺臟移植⊕肝臟移植⊖ |
| 4 | 7 日 | 昭和2年 6月19日 | ⊕ | 無 | 2 | 0 | 肺臟移植⊖肝臟移植⊕ |
| 5 | 7 日 | .. | ⊕ | 無 | 4 | 0 | 肺臟移植⊕肝臟移植⊖ |
| 6 | 7 日 | .. | ⊕ | 無 | 4 | 1 | 肺臟移植⊕肝臟移植⊖ |
| 7 | 7 日 | .. | ⊕ | 無 | 4 | 0 | |
| 8 | 7 日 | .. | ⊕ | 無 | 4 | 0 | 實驗動物一例早期斃死 成績⊕ |
| 9 | 7 日 | 昭和2年 6月21日 | ⊕ | 無 | 2 | 1 | |
| 10 | 7 日 | .. | ⊕ | 無 | 2 | 0 | |
| 合計 | | | 9⊕ 1⊖ | | 30 | 2 | 6.67 % |

即ち、卵膜に腫瘍の發育陽性である胎雛を採り出し(孵化開始後 17, 8, 9 日, 移植後 10, 11, 12 日)、之れ的眼球を剔出し組織全部を共に細剪し乳劑に含し、他の健康成熟家鶏の皮下へ移植した。而して上表の如く 6.67 %の陽性成

績を得た。経験上孵化家鶏卵内移植實驗に據る胎雛の起原保有率の最も高いのは肺臓であるが、本實驗に於ても對照として行つた内臓移植に據つて肺臓には多量の陽性成績を得て居る。即ち孵化家鶏卵内に於ても前項同様な關係を僅かではあるが示すことは明瞭である。

第5 腫瘍家鶏の眼球内へ異物を挿入せる實驗成績

腫瘍を移植した家鶏の、移植せる部位と全く關係のない他の遠隔組織へ何か異物を挿入するに其の部分に腫瘍の續發する事は夙に藤浪、鈴江氏に依て認められ、大島、吉田、露木、大田氏等は更に各臓器組織に就ても同様な實驗を行つて陽性成績を得て居る。而して私は之れと同様な實驗を眼球内で行つてみた(第6表)。

第6表 腫瘍家鶏の眼球内異物挿入實驗成績 昭和5年11月15日始め
昭和6年2月27日終る(實驗例8羽)

| 回数 | 腫瘍移植月日 | 異物挿入日 | 症 狀 | 腫瘍發育 斃死月日 | 眼球形 態内成 轉 | 眼球移植 成績 | 備 考 |
|----|----------------|---------------|----------------|-----------------|-----------------|----------------|-----------|
| 1 | 昭和5年 11月15日 | 昭和5年 12月1日 | 挿入後眼強 度の鬱血 | 昭和5年 12月23日 | ⊖ | 眼球内容 (前房等)⊕ | 成熟家鶏、肺臓轉移 |
| 2 | " | 昭和5年 12月5日 | " 潤 濁 | 昭和5年 12月27日 | ⊖ | " ⊖ | " 轉移なし |
| 3 | " | 昭和5年 12月5日 | " | 昭和5年 12月27日殺 | ⊖ | 検査せず | " " |
| 4 | 昭和6年 1月7日 | 昭和6年 1月15日 | " | 昭和6年 2月5日 | ⊖ | " | " " |
| 5 | " | 昭和6年 1月15日 | 反應鬱血な く直に潤濁 | 昭和6年 2月20日 | ⊖ | " | " 肺臓轉移 |
| 6 | 昭和6年 1月15日 | 昭和6年 1月22日 | 鬱 血 | 昭和6年 2月16日 | ⊖ | " | " 轉移なし |
| 7 | " | " | 前房潤濁 | 昭和6年 2月27日 | ⊕ | 眼球移植⊕ | " " |
| 8 | " | 昭和6年 2月3日 | " | 昭和6年 2月27日 | ⊖ | 検査せず | " " |
| 計 | 8 例 | | | | | 検査3例中 2例陽性 | |

上表に示す如く腫瘍家鶏の眼球結膜部より硝子體に向つて石松子乳劑を挿入した。挿入後何れも眼球は鬱血し、出血を認め、角膜は潤濁し数日後前房内へ滲出物を堆積するが数日ならずして消失し再び透明となる。然し瞳孔を通じて稍、螢光色を放つ。本實驗に依つて轉移様組織を自然に認めたるものは7日目の實驗に於て一例あるが、これには強い炎性變化を伴つて居て眞の

腫瘍であるか否か明言し得ない。又上表備考に示すが如く、眼球組織移植に據つて家鶏の皮下に腫瘍發育陽性の成績を得たものが一例ある。同例は他家鶏へ其の一片を移植して陽性成績を得て居る。然しこの成績があるからして新生組織を直ちに腫瘍とする事は出来ない。腫瘍組織は出来て居なくても腫瘍起原は前記の如く眼球内に多量に存し得るからである。

(4) 結 論

家鶏肉腫起原は、肉腫の發生部位に止まらず全身諸臓器組織に肉眼的及組織學的に、形態學上腫瘍組織及細胞を認めないでもこれが存在して居る事は既に文献上明かであるが、起原の分布には概ね濃淡がある。私等は既にこの方面に向て多數の實驗を重ねたが今回は眼球に就て實驗を試みた。今、以上の數項に互る實驗の成績を觀察するに、第一、腫瘍家鶏に於ては特に眼球内に轉移して肉眼的にも、組織學的にも、腫瘍組織及細胞を認めないでも、之れを他の健康な家鶏へ移植すれば34.09%の腫瘍發育陽性成績を得る。更に之れを各組織に分ちて檢した成績に據るに、本實驗に於ては全體の合計成績29.96%を示し、この中硝子體46.67%、虹彩、毛様體45.0%、眼底、網膜瓣30.0%、角膜17.31%、視神經10.0%の陽性率であつて、對照として腦組織を移植したものに於ては30.0%の陽性率を得て居る。即ち眼球内に於ては特別の症狀及形態學的變化は發現しなくても、腫瘍起原は保有せられて居る事は明白なる事實である。硝子體、虹彩、毛様體に於ては高い陽性率を得たが、其他の組織に於ては陽性率は低い。次に孵化家鶏卵内へ家鶏肉腫を移植して卵膜に陽性なるもの、胎雛の眼球移植に於ても、成熟腫瘍家鶏の時に比較するに其の成績は劣つては居るが、之れ亦6.67%の陽性率を得て居る。次で腫瘍家鶏の眼球内へ異物を挿入して其の周圍に腫瘍組織の發生があるか否かの實驗を行つたものに於ては、實驗の數少く企圖した成績を示さず、唯一例に於て疑はしいものを得て、之れが移植に據て腫瘍發育陽性を得ては居るが之れは果して肉腫が發生し得たを稱し得られるか暫らく疑問とする。

要するに腫瘍家鶏の眼球組織移植は企圖したやうな良成績は得られては居ない。然し腫瘍家鶏の眼球内には特に臨牀上には症狀を現はさないが腫瘍起

原を保有し得る事は明かである。然らば腫瘍を移植して何日頃から眼球内へ腫瘍起原が發來するか、其れは今日明かではないが、少なくとも腫瘍の相當發育旺盛を示した状態の時には、眼球組織内には腫瘍組織の發育を形態學的に證明しなくても、起原は確實に存在し、殊に虹彩、毛様體及硝子體に於ては多分に含まれて居る事は明かである。起原含有の量的及強弱關係に就ては個々の例證に據つて差異はあるが、私達の在來の實驗上より云へば、虹彩、毛様體、硝子體に於ては肝臟、腎臟等の起原含有量及強弱を相比す可き數字を示して居る。

眼球の組織學的検査上に於ても、虹彩、毛様體に軽い充血を證する事があるのみで腫瘍組織は勿論、硝子體內に異常物質の存在して居たやうなものはない、何故に虹彩、毛様體、硝子體內に起原を含有するこゝが多いかに就ては今茲に明かに云ふ根據を持つて居ない。前に於ても述べたやうに原因不明の疾患の研究には好んで眼球組織が選擇使用せらるゝ點、或は *Spirochaeta* 病に於て特に硝子體濁濁の後遺症として好發する點、竝に本實驗の示す腫瘍に關する成績等よりして觀るに、眼球組織は一般の臟器或は組織とは機能上の感覺器としての以外に、他の組織とは異りたる生物學的性質を多分に保有するものと見做し得可きであつて、今後の眼球に關する研究に當てもこの點を考慮する要が多分にあり、腫瘍起原問題と共に私達の本實驗の成績は斯かる意味の上からも注意せらる可きものであると思ふ。(昭和7年8月脱稿)

擧筆に當り木村教授の御校閲を深謝す。

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家鶏腫瘍の研究 (第二十回報告)
 家鶏肉腫起原の種々の鳥類孵化卵内及び孵化
 離体内への蔓延移行に關する實驗に就て

名古屋醫科大學病理學教室

大 島 福 造
 籾 内 好 夫

Studien über die Hühnergeschwülste.

20. Mitteilung.

Experimentelle Untersuchungen über die Uebertragung des
 Hühnersarcom-Agens in die Eier von verschiedenen
 Vögeln während ihrer Brutzeit sowie in die Körper
 der ausgeschlüpften Hühnchen.

Von

F. Oshima und Y. Yabuuchi.

Aus dem Pathologischen Institut der Medizinischen Fakultät zu
 Nagoya. (Vorstand: Prof. T. Kimura.)

Seit 1927 habe ich mehrere Mitteilungen über meine eigenen Untersuchungen veröffentlicht, welche lauten: 1. ob das Agens des Hühnersarcoms, welches in die Hühnereier eingepft wird, sich auf den Embryo übertragen kann, und 2. ob die Eier, welche von den mit Sarcom implantierten Hühnern gelegt werden, das gleiche Agens enthalten und ob dasselbe sich auch auf die Kücken überträgt.

In den vorliegenden Untersuchungen habe ich folgende Experimente durchgeführt. Das Hühnersarcom wurde erstens während der Brutzeit der verschiedenen Vogelrassen in die Eier eingepft (bei ausgewachsenen Vögeln blieb die Implantation gewöhnlich negativ). Zweitens wurde dasselbe Sarcom den weiblichen Vögeln verschiedener

Arten während ihrer Eierlegezeit eingepfht, um festzustellen, ob dieses Sarcom-Agens in die von solchen Vögeln gelegten Eier übertragen werden kann. Als dritte Prüfung untersuchte ich den Zusammenhang der Implantation mit Säugetiiergegeschwulst und dem Embryo in den Vogeleiern. Die erzielten Resultate wurden folgendermassen zusammengefasst.

(I) Das Hühnersarcom konnte ziemlich erfolgreich in die Eier von Okekko (Seidenhuhn), Pute, Ente, Perlhuhn und Uzura (Wachtel) implantiert werden, obgleich der positive Prozentsatz niedriger war als bei den Hühnereiern während der Brutzeit. Geschwulstentwicklung konnte bei diesen Fällen hauptsächlich in den Eihäuten festgestellt werden. Das histologische Bild zeigt sich nicht anders als bei den Fällen, bei denen die Hühnereier zu Versuchszwecken angewandt wurden. Bei diesen Versuchen konnte nie eine natürliche Metastasenbildung im Embryo festgestellt werden.

(II) Ferner konnte auch die Uebertragung des Sarcom-Agens in den Embryo der verschiedenen Vogeleier, bei denen die Transplantation mit Hühnersarcom in ihre Eihäute positiv war, festgestellt werden, ähnlich wie bei den Fällen, bei denen die Hühnereier als Transplantationsboden gebraucht wurden. Biologisch kann man mit grosser Wahrscheinlichkeit annehmen, dass Okekko (Seidenhuhn) und Huhn der gleichen Rasse angehören.

(III) In den Organen des Embryos der verschiedenen Vogelrassen zeigt sich in den Lungen eine grössere ausgedehnte Verbreitung des Agens als in der Leber.

(IV) Es lassen sich keine Unterschiede der Fähigkeiten des Agens zwischen den Embryonen der zu anderen Rassen gehörenden Vögeln und der Hühnern, die mit Hühnersarcom eingepfht wurden, erkennen. Auch hat das gleiche Agens keinen Einfluss auf die Zellen der anderen Gruppen, z. B. Pigmentzellen von Okekko zeigen keine Proliferationsneigung.

(V) Bei Implantation des Hühnersarcom in die Eier von anderen Vogelrassen während der Brutzeit sieht man, dass wenn

man die Eier nach der genannten Implantation ruhig im Brutofen lässt, die jungen Tiere zur richtigen Zeit vollständig ausschlüpfen, jedoch konnte man in den jungen Tieren sofort nach dem Ausschlüpfen keine Geschwulstentwicklung feststellen. Implantierte man aber die Organe der oben genannten Tiere in die gesunden Hühner unter die Haut, so konnte man eine Geschwulstentwicklung beobachten; folglich konnte die Uebertragung des Agens durch die Implantation in die Eier auf die jungen Tiere nachgewiesen werden. Dieses positive Resultat ist aber nur bei den frisch ausgeschlüpfen Tieren zu erhalten, diese Fähigkeit geht aber später verloren. Es lässt sich mit grosser Wahrscheinlichkeit annehmen, dass dieses Agens auf ganz natürliche Weise aus dem Körper ausgeschieden wird.

(VI) Durch die intravenöse Injection oder subcutane Implantation des Hühnersarcoms während der Eilegezeit konnte die deutliche Uebertragung des Agens in den Embryo von Okekko (Seidenhuhn), Uzura (Wachtel) und Enten konstatiert werden. Dabei zeigte sich bei weiblichen Vögeln wie Okekko und Uzura die subcutane Implantation mit Hühnersarcom positiv und bei weiblichen Vögeln wie Pute, Perlhuhn und Enten mit gleicher Impfung negativ. Dann wurden nach einer bestimmten Zeit die gelegten Eier gesammelt und in den Brutofen gelegt, um festzustellen, ob das Agens in den Embryo übertragen wurde. Nach den oben beschriebenen Ergebnissen kann man annehmen, dass das bei den anderen Vogelrassen eingeführte Agens, bei denen die Geschwulstentwicklung negativ war, nach der Einführung nicht so rasch verschwinden, sondern dass es durch den Eierstock in die Eier übergeht und dass dieses Agens in den Eiern, welche noch keine Rassenspezifität haben, entweder ohne weitere Entwicklung bleiben oder sich mehr oder weniger vermehren — es bleibt ohne spezielles Hindernis gegen die Embryoentwicklung — und es wird im Embryo konserviert.

(VII) Das Agens, welches in die Körper von anderen Vogelarten eingeführt worden ist, verschwindet nicht sofort, aber es bleibt

nur während einer bestimmten Zeit in den Körpern. Es lässt sich somit mit grosser Wahrscheinlichkeit annehmen, dass die Nichttransplantabilität der Geschwulst entweder auf die Unmöglichkeit der Agenskonservierung oder auf die Nichttransplantabilität der Gewebe und Organe zurückzuführen ist; es kann nicht denkbar sein, dass das Agens gleich nach der Einführung zugrunde geht.

(VIII) Rassenspezifität für die Geschwulstentwicklung lässt sich nur bei ausgewachsenen Tieren nachweisen, während bei den Embryonen keine Spezifität erkennbar ist. Haben sich aber die ausgeschlüpften Vögel zu dem Grade entwickelt, wo man die verschiedenen Rassen voneinander unterscheiden kann, so zeigen sie allmählich ihre Rassenspezifität und infolgedessen ist das Agens schon aus dem Körper ausgeschieden worden. Es konnte nämlich festgestellt werden, dass bei Vögeln nachdem sie sich zu dem Grade entwickelt haben, wo man ihre Art erkennen kann, das angeborene Agens auf eine nicht fest zu stellende Weise ausgeschieden war.

(IX) Ferner wurden Kaninchensarcom, Rattensarcom und Mäusekarzinom in die Eihäute von Hühner, Okekkos, und Puten ohne Schwierigkeit implantiert. In den Embryonen wurde aber niemals eine Metastasenbildung beobachtet; auch konnte man histologisch weder Geschwulstzellen noch Geschwulstgewebe konstatieren.

(X) Zwecks Feststellung, ob in den Organen der oben erwähnten Vogelembrionen derselbe Keim des applizierten Geschwulstes enthalten ist oder nicht, wurde die Organemulsion des genannten Embryo in Kaninchen, Ratten und Mäuse implantiert. Die Resultate waren durchaus negativ. Somit wurde nachgewiesen, dass das Hühnersarcom biologisch anders ist als die Säugetiergeschwulst.

Es konnte somit der Beweis erbracht werden, dass die biologischen Eigenschaften des Hühnersarcoms mit denen der Säugetiergeschwulst nicht in Einklang gebracht werden können.

第一章 緒 言

家鶏肉腫の異種鳥類移植に當り鵝或は烏骨鶏は皮下接種によりても發育陽性である事は既に周知の處であるが、最近藤浪氏に依りて何等處置を施さない正常家鴨に家鶏肉腫が移植し得られ、然も之れが家鴨間に於てよく世代を繼ぎ得らるゝ事實認められ、之に就いて種々興味ある實實もあり、其の後井上氏等の同様な證明出で、即ち、尋常皮下移植に據ても異種動物間移植成功の成績が擧げられて、家鶏間のみに移植され得る家鶏肉腫が持つ特殊性が漸次失はれ行く傾向を示すに至つた。移植部位の選擇に由て、異種動物間移植成績に難易あるは既に知られた處であつて、我が家鶏肉腫に於てもこの事認められ、假令ば腦内移植或は齒髓内移植等を行ふ時は他種動物に於てもよく移植し得らるゝ等は、其の適例の一つである。以上は成熟動物間移植の問題であるが、曾て清野氏は孵化家鶏卵内へ腫瘍を移植する時は卵膜上に腫瘍の發育容易であり、續いて異種動物鳥卵内に各種の腫瘍を移植し、之れ亦悉く成功せられ其後各方面に於ての追證により、この事實は愈々確認せられ、移植腫瘍は成熟動物に於ては特殊性を保有する事多分なるも、胎生期に於ては其の特殊性少なく、胎兒と成熟動物との間に於ては斯かる點に於て著明なる生物學的差異を示す事實が擧げられた。

家鶏肉腫起原の全身的存在に關しては今更、新らしく述ぶるの必要もなからう。私は曾てこの事實を孵化卵内に移植したる場合に於ける卵内起原の分布状態を検し、又産卵期にある家鶏に移植して其の起原の卵内への移行に就て檢索し報告する處があつた。即ち、孵化卵内へ家鶏肉腫を移植して卵膜上に腫瘍組織の發生したものゝ胎雛組織内には肉眼的及組織學的に肉腫組織及細胞を認めなくとも、之れを他の健康な成熟家鶏に移植するに、同様な肉腫組織を發生せしめ得る性能を有し、其の起原は常に卵膜上に止まらず胎雛組織内にも分布し存在する事實あるを證明した。又之れのみならず産卵期にある雌家鶏に移植して、夫れより卵を採り、雛を得た場合には、其の雛にも起原の保有せらるゝ事實を明かにした。然し前回數度に互る報告は悉く家鶏による實驗であつて、その外一部分烏骨鶏を用ひての實驗を報告したが、是等の

事柄は異種動物鳥卵を用ひた場合には如何、殊に異種動物に於ける腫瘍發育の態度が胎生期と成熟動物間に特殊性を有する事實等からして、是等の成績は是非とも攻究す可き必要のある處であらうと思ふ、又この種の實驗は一面胎兒より成熟し各々動物の持つ特徴の發現竝に異種動物間腫瘍移植難易の考按上にも資する處があるを思ひ、私達現今迄の成績の有りの儘を羅列して、其の考按に關しては同好學者の參考に委ね一言報告し置かうと思ふ。

第二章 實驗材料竝に方法

實驗材料としては毎に大鳥系家鶏肉腫を用ひ、この外異種動物腫瘍種としては白鼠肉腫、廿口鼠癌腫、家兎肉腫を用ひ、使用したる卵は家鶏卵、烏骨鶏卵、家鴨卵、珠鶏卵、吐綫鶏卵、鶉卵にして、成熟動物としては家鶏、烏骨鶏、家鴨、珠鶏、吐綫鶏、鶉、廿口鼠、白鼠、家兎を使用した。而して移植方法は各種卵を孵化室内にて一定期間孵化し、卵殻上より穿孔して腫瘍組織片を移植し、孵化を繼續し孵化満期となる以前に破殻し、其の胎雛組織を成熟動物に移植して腫瘍の發生の有無を検じ、又孵化を完了せしめて雛を得、起原の雛への移行狀態を成熟動物への返還移植實驗に據つて檢した。家鶏類以外の鳥類は多く産卵に季節的關係があり、又卵の完全に受精したものを得るには困難な事があり、又各鳥卵種に依て孵化期間に長短があり毎に一定の時間的關係を保つ事が出來ず、且つ私達の實驗は何れも相當孵化期間を経て、胎雛の發育せるものゝみを檢査した爲に胎生初期に於ける狀態は知るこゝが出来ない。而して胎雛組織内の起原の有無檢査に當つては主として家鶏卵に於ける經驗上、肺臓及肝臓の二臓器を選んで材料となし、比較的小なる胎雛は臓器を可及的各方面から採取した。且つ又私達の實驗上に於て卵の未受精なるもの及孵化期中の死卵、腐敗卵は實驗の數字から棄棄した。從て次に掲ぐ多數の表に於ては完全に私達の實驗の目的に用ひ得たものゝみを舉げて陽性率其他を採り、他は混雜の嫌あり且つ不必要なるが爲に削除した。

第三章 實驗成績

第一節、孵化各種鳥卵内へ家鶏肉腫を移植せる實驗竝に卵

膜上腫瘍發育陽性卵の胎雛臓器移植實驗

1916年 Rous 氏は家鶏肉腫を孵化家鶏卵内に移植して陽性成績を得、之れを同年相前後して、清野、川上氏は孵化家鶏卵内に同じく家鶏肉腫を移植して陽性成績を得、加之、吐綬鶏卵、家鴨卵、鶯卵内に腫瘍の移植陽性なるを認められ、其後、甘口鼠癌、白鼠肉腫等をも鳥卵内に移植して陽性を得、剩へ清野、末安、辻氏は人體の腫瘍を鳥卵内に移植して陽性成績を得られ、腫瘍は胎生期に於ては成熟動物の如く種屬特異性を有しない事實を明かにせられた。後林氏及大島等は同様の實驗を行ひ、後、大島、三尾氏等は之れに關して種々なる實驗を行つて多數の報告をなした。續いて私達は孵化鶏卵内に腫瘍を移植するに卵膜に腫瘍を發生するのみならず、其の起原は肉眼的組織學的に腫瘍組織及細胞を認めなくても胎嚢組織内に滲透して居る事を證明した。然し是等は皆家鶏卵のみを用ひたる實驗である。成熟烏骨鶏に家鶏肉腫の發育陽性なるは、今、藤井、堀内、大島、三尾氏等に據て認められ、殊に色素細胞の添加増殖をも認め、爾來烏骨鶏は家鶏肉腫に對し興味ある動物とさるゝに至つた。又鶉に就ては、林、向田、大島、赤松氏等に據て、之れ亦家鶏肉腫の皮下移植陽性なる事を證明されたが、鶉に家鶏肉腫を移植するに毎に多少纖維性となり、世代を重ねるに終に移植不可能に至る事を一般とされて居たが最近大塚氏の研究に據て、之れ亦家鶏肉腫と同様によく發育し轉移も形成される事が明かとなつた。其の他の動物としては藤浪、井上氏等の家鴨への移植が陽性であるの他、完全に腫瘍の發育陽性なる鳥類なく、たゞ移植部位の選擇に依ては、一、二の個所に陽性成績を得て居る。腦内移植等は即ち夫れである。私は今迄多數の種々な鳥類に腫瘍を移植したが、烏骨鶏及鶉の場合を除き其の他の動物への移植は總て陰性であつた。然し異種動物であつても其の孵化卵に於ては陽性であつて、之れは後述の實驗を觀ても明かである。然し更に私達は本實驗に於て卵膜に腫瘍發育陽性の例證に於ては胎嚢の臓器内即ち肺臓及肝臓内に起原の分布の如何を検して、家鶏卵、即ち同種動物に於てなした實驗と異種動物卵を用ひてなした實驗との間に差異のあるかを否かを檢した。而して其の成績は次表のやうである。本實驗に於ては極めて多數の使用卵中、未受精卵、腐敗卵は總て廢棄し、成績の完全したもの

のみを表示する。又表中成績不明なるは、腫瘍の發育時期に到達せざる以前に斃死し又は成績を觀察し得なかつたものである。

第1表 家鶏肉腫の異種族孵化鳥卵内移植實驗成績表

| 實驗 回数 | 移植實 驗月日 | 卵 種 | 移植 後日數 | 移植 後日數 | 腫 瘍 有 無 | 肺 | | | 肝 | | | 備 考 |
|----------|------------|--------|-----------|-----------|------------------|---------|---------|---------|---------|---------|---------|---------------|
| | | | | | | 移植 數 | 不明 數 | 陽性 數 | 移植 數 | 不明 數 | 陽性 數 | |
| (1) | 10月9日 | 烏骨鶏 | 7日 | 12日 | ⊕ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 13日 | ⊕ | 2 | 0 | 2 | 2 | 0 | 2 | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | 2 | 0 | 2 | 2 | 0 | 0 | 肺臓一ヶ月 後陽性 |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | 2 | 2 | 0 | 2 | 0 | 0 | 肺臓移植一 週日斃死 |
| (2) | 3月20日 | 家鴨 | 9日 | 15日 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| (3) | 3月22日 | 烏骨鶏 | 7日 | 10日 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 13日 | ⊕ | 4 | 0 | 2 | 4 | 0 | 0 | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | 4 | 2 | 0 | 4 | 0 | 0 | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | 4 | 0 | 4 | 4 | 2 | 2 | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| (4) | 4月22日 | 珠鶏 | 6日 | 17日 | ⊕ | 4 | 0 | 2 | 4 | 0 | 0 | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | 4 | 0 | 0 | 4 | 2 | 0 | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| (5) | 5月15日 | 家鴨 | 10日 | 14日 | ⊕ | 4 | 2 | 0 | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | 4 | 0 | 2 | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | 4 | 0 | 2 | — | — | — | |

| | | | | | | | | | | | | |
|------|-------|-----|-----|-----|---|---|---|---|---|---|---|--|
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 16日 | ⊕ | 2 | 0 | 2 | 2 | 0 | 0 | |
| | 22 | 22 | 22 | 22 | ⊕ | 2 | 0 | 2 | 2 | 0 | 1 | |
| | 22 | 22 | 22 | 22 | ⊕ | 2 | 0 | 0 | 2 | 0 | 0 | |
| (6) | 5月15日 | 吐經鷄 | 10日 | 15日 | ⊕ | 4 | 0 | 2 | 4 | 2 | 0 | |
| | 22 | 22 | 22 | 22 | ⊕ | 4 | 4 | 0 | 4 | 0 | 2 | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| (7) | 6月1日 | 烏骨鷄 | 7日 | 12日 | ⊕ | 4 | 2 | 2 | 4 | 0 | 2 | |
| | 22 | 22 | 22 | 22 | ⊕ | 2 | 0 | 0 | 2 | 0 | 0 | |
| | 22 | 22 | 22 | 22 | ⊕ | 2 | 0 | 0 | 2 | 0 | 2 | |
| | 22 | 22 | 22 | 22 | ⊖ | 2 | 0 | 2 | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | 2 | 0 | 0 | — | — | — | |
| (8) | 6月10日 | 鵪 | 4日 | 12日 | ⊕ | 2 | 0 | 0 | 2 | 0 | 0 | |
| | 22 | 22 | 22 | 22 | ⊖ | 2 | 0 | 0 | 2 | 0 | 0 | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| (9) | 6月10日 | 珠鷄 | 9日 | 15日 | ⊕ | 2 | 0 | 1 | 2 | 0 | 1 | |
| | 22 | 22 | 22 | 22 | ⊕ | 2 | 0 | 1 | 2 | 0 | 0 | |
| | 22 | 22 | 22 | 22 | ⊖ | 2 | 0 | 0 | 2 | 0 | 0 | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| (10) | 6月15日 | 家鴨 | 9日 | 15日 | ⊕ | 2 | 0 | 2 | 2 | 0 | 2 | |
| | 22 | 22 | 22 | 22 | ⊕ | 2 | 0 | 0 | 2 | 0 | 0 | |
| | 22 | 22 | 22 | 22 | ⊕ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 16日 | ⊕ | 4 | 0 | 2 | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| | 22 | 22 | 22 | 22 | ⊖ | — | — | — | — | — | — | |
| (11) | 6月21日 | 烏骨鷄 | 7日 | 13日 | ⊕ | 2 | 0 | 2 | 2 | 0 | 0 | |

| | | | | | | | | | | | | | |
|------|-------|-----|-----|-----|---|---|---|---|---|---|---|-----------------|--|
| | | 〃 | 〃 | 〃 | 〃 | ⊕ | 2 | 0 | 0 | 2 | 0 | 0 | |
| | | 〃 | 〃 | 〃 | 〃 | ⊕ | — | — | — | — | — | — | |
| | | 〃 | 〃 | 〃 | 〃 | ⊕ | — | — | — | — | — | — | |
| | | 〃 | 〃 | 〃 | 〃 | ⊕ | — | — | — | — | — | — | |
| | | 〃 | 〃 | 〃 | 〃 | ⊕ | — | — | — | — | — | — | |
| | | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| | | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | |
| (12) | 7月18日 | 鶉 | 5日 | 11日 | ⊕ | 4 | 0 | 2 | 4 | 2 | 2 | | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | 4 | 0 | 0 | 4 | 0 | 2 | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | 2 | 0 | 0 | 2 | 0 | 0 | 各例より小片 なとり移植 | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | | | | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | | | | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | | | | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | | | | | | | | |
| (13) | 7月18日 | 吐綫鶉 | 10日 | 15日 | ⊕ | 4 | 0 | 4 | 2 | 0 | 0 | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |
| (14) | 6月10日 | 珠鶉 | 10日 | 15日 | ⊖ | 2 | 0 | 0 | 2 | 0 | 0 | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | 2 | 0 | 0 | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | | |

上表の實驗を更に簡単に概括的に表示するに次表の如くである。

第2表 家鶉肉腫の異種族孵化鳥卵内移植實驗概括表

| 鳥 種 | 使用 卵數 | 陽性 數 | 陽性率 | 肺臟 移植 數 | 不明 數 | 陽性 數 | 陽性率 | 肝臟 移植 數 | 不明 數 | 陽性 數 | 陽性率 |
|------|----------|---------|--------|---------------|---------|---------|--------|---------------|---------|---------|--------|
| 烏骨鶉卵 | 31 | 17 | 54.84% | 34 | 6 | 16 | 57.14% | 30 | 2 | 8 | 27.59% |
| 家 鴨 | 23 | 9 | 39.13% | 26 | 2 | 12 | 50.00% | 10 | 0 | 3 | 30.00% |
| 珠 鶉 | 14 | 4 | 28.57% | 18 | 0 | 4 | 22.22% | 16 | 2 | 1 | 7.14% |
| 吐綫鶉 | 17 | 3 | 11.11% | 12 | 4 | 6 | 75.00% | 10 | 2 | 2 | 25.00% |
| 鶉 | 14 | 3 | 21.43% | 14 | 0 | 2 | 14.27% | 14 | 2 | 4 | 33.33% |

私等は既に多数の家鶏肉腫を家鶏卵内に移植した経験があり、其の移植成績は移植材料の如何及技術の巧拙に由つて極めて不同であるが、凡そ 50-100 %の陽性を得る事は明かである。然し何等操作上疑のない時には 100 %の陽性を得るを毎こする。今回は特に家鶏卵を用ひた時の成績は挙げず、異種鳥卵のみを以ての實驗に就て表示した。この成績を以て觀るに最高率なのは烏骨鶏卵に移植した時で、其の卵膜上腫瘍の陽性であつたもの 54.84 %で、最低率は吐綬鶏の 11.11 %である。この陽性率は材料、操作共に悉く疑のないものを以てなした數字であるから、異種鳥卵内移植の成績は多少家鶏卵内移植時よりは不良のやうに感ずるが、家鶏卵内移植時と比較し、しかく成績に軒輊がないことも云ふ事が出来やう。陽性腫瘍の發育度は、家鶏卵よりも何れも正常孵化期間が永い爲に従つて形成される腫瘍も大形なるものが多く、小指頭大以上に至つたものが烏骨鶏にて 4 例、珠鶏 2 例、家鴨卵にて 2 例ある。發生した腫瘍の肉眼的所見は何れも同様な像で球狀をなし、周圍卵膜組織には多少の鬱血あるものあり又何等の反應のないものもある。灰白色をなし中央部に多少の壞疽を見るもの又中央表面に臍狀陷凹を示せる者もある。是等は家鶏卵を用ひた時と同様である。組織學上に於ても家鶏に見たると同様の像を示し、卵膜の所見等は曾て私の下に於てなした三尾氏の成績と殆んご同様であるから此處に記載を省略する。

次に、斯くの如き卵膜腫瘍の發育陽性なる卵、即ち、移植後 12-16 日目の胎雛を各鳥卵合せて 29 例及卵膜腫瘍の陰性であつた 11 例の胎雛を採り出して、各々の肺臓及肝臓を健康成熟家鶏の皮下へ移植して腫瘍の發生の如何を検した。其の數合計肺臓 104 個、肝臓 80 個であるが、肺臓移植に據つて陽性なるもの 40 例、肝臓に於て 18 例の陽性を得た。曾て私は三尾氏と共に家鶏の卵膜に腫瘍の發育陽性なるもの、胎雛を移植した時は、肺臓に於て 48.2 %、肝臓に於て 32.2 %、腎臓に於て 30.4 %の陽性率を得て居るが、之れと對照するに異種鳥卵胎雛移植に據つても前述の如く、殆んご同様か又は多少少ない成績を得て居る。烏骨鶏は成熟動物と雖も、よく可移植性を示すから、異種鳥動物と云ふも眞のものではなく、この成績は肺臓に於て 54.84 %、肝臓に於

て 27.58 % の高率を示して實際上家鶏を用ひた時と同様である。然し珠鶏、吐綬鶏、家鴨等は之れに於けるよりは不良な成績である、然し陽性成績を得る事だけは極めて明瞭である。卵膜上腫瘍發育の陰性であつたものに於ては胎雛臓器移植も亦陰性を示した。臓器移植に依り成熟動物に陽性なる例證に於ける腫瘍の發育像は特に不良なるが如きものなく尋常の發育を示す。然し中には發育迄に多少時間を要したものもある。然し組織像には差異がない。胎雛に於て轉移して肉眼的、組織學的に認められる如き腫瘍組織及細胞を證明したものは勿論 1 例もない。之れ等の成績は家鶏卵に於けると同様であつて、腫瘍起原の卵及胎雛への瀰蔓状態は同種動物と異種動物との間に軒輊がないと言ひ得る所見である。

成熟烏骨鶏に家鶏肉腫を移植した時には近隣の色素細胞が増殖する(今氏等)爲に、烏骨鶏の肺臓及肝臓を移植した時に於て、特に本種細胞の態度に就て注意したが本回の實驗にては特に増殖したものを認め得なかつた。又第 15 回報告時に於ては腫瘍を烏骨卵内に移植した場合に胎雛の臓器内に腫瘍結節を形成したものを得たが本回の實驗に於ては斯るものをも認め得なかつた。然し烏骨鶏卵は前述せる如く異種動物卵と稱し得可き點、稍々他の鳥類と異なる状態で又鶏に於ても之れに類似の状態であるから、この兩者を他の異種鳥卵と同一に律することは多少の疑がないでもない。

第二節 孵化各種鳥卵内に腫瘍を移植し孵化満期となり産 出せる雛の臓器移植實驗

曾て私達は孵化家鶏卵内に腫瘍を移植し卵膜に腫瘍發育の陽性であつた卵が孵化満期となつて雛として發生した時には、特に對照無處置の雛と外觀上異なる所はないが、之の臓器を採つて他の家鶏へ移植するも原種同様の腫瘍の發生あり、即ち起原を保有する事明であるを報告した。この事は三尾氏等の確證に據つて明瞭となつたが、之れは家鶏を用ひての實驗であるから更に進んで前節述べた様な異種鳥卵にての實驗を行つた。即ち胎生期には動物腫瘍に對する特異性がないが、成熟し其の鳥類の特性が現はれると腫瘍に對する態度は、前とは極めて異なることは清野氏等又其れ以前よりも認められて居る

| | | | | | | | | | | | | | | | |
|------|-------|-----|-----|---|-----|---|---|---|---|---|---|---|---|---|--|
| (7) | 5月20日 | 烏骨鶏 | 10日 | ⊕ | 5日 | ⊖ | } | 4 | 0 | 2 | } | 4 | 0 | 2 | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (8) | 5月21日 | 吐經鶏 | 12日 | ⊕ | 5日 | ⊖ | } | 4 | 2 | 0 | } | 4 | 2 | 0 | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (9) | 5月22日 | 烏骨鶏 | 5日 | ⊕ | 7日 | ⊖ | } | — | — | — | } | — | — | — | |
| | " | " | " | ⊕ | 8日 | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (10) | 5月22日 | 鶉 | 6日 | ⊕ | 3日 | ⊖ | } | 2 | 0 | 2 | } | 2 | 0 | 0 | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (11) | 5月22日 | 家鴨 | 7日 | ⊕ | 1日 | ⊖ | } | 2 | 0 | 0 | } | — | — | — | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (12) | 6月10日 | 吐經鶏 | 10日 | ⊕ | " | ⊖ | } | 2 | 0 | 1 | } | 2 | 0 | 0 | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (13) | 6月12日 | 烏骨鶏 | 3日 | ⊕ | 2日 | ⊖ | } | 2 | 0 | 2 | } | — | — | — | |
| (14) | 6月12日 | 珠鶏 | 5日 | ⊕ | 1日 | ⊖ | | | | | | | | | |
| (15) | 6月28日 | 烏骨鶏 | 10日 | ⊕ | 7日 | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (16) | 7月1日 | 家鴨 | 7日 | ⊕ | 1日 | ⊖ | } | 4 | 2 | 2 | } | 4 | 0 | 1 | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| (17) | 7月7日 | 烏骨鶏 | 7日 | ⊕ | 14日 | ⊖ | } | 4 | 0 | 4 | } | 2 | 0 | 0 | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | 30日 | ⊖ | | | | | | | | | |
| | " | " | " | ⊕ | " | ⊖ | | | | | | | | | |

前表を簡単に動物別として通覧して見るに次の如く成績こそ不良ではあるが陽性を得たものが相當にあり、烏骨鶏の如きは殆んど家鶏と同様の成績である。之れは成熟烏骨鶏或は鶉に対する家鶏肉腫の非特異性にも關連す可きであらう。

孵化期中にある卵内に腫瘍を移植し、之れから雛を得る實驗は私が昭和2年

に行つた事であつて、然も其の雛には肺臓に 45.0%，肝臓に 50.0%，腎臓に 12.5% に腫瘍起原を保有するを皮下移植に據て證明した。即ち孵化期中に於ける卵膜に發生せしめ得た腫瘍に含まるゝ起原は、よく胎雛組織内にも移行に孵化満期となつて外へ出でた雛に於ても尚ほ存在する事は之れに據て明瞭である。又實際上斯かる雛に特發的に腫瘍組織の新生あるは曾て私と友澤氏が委しく報告した處である。本回の表示せる實驗は成熟鳥類に於ては陰性である可き鳥類であるが爲に、胎生期の一般的共通性の性質より孵化して各其の鳥類としての特徴の發現するに當ては起原は如何になり行くか興味深き處である。

第4表 家鶏肉腫移植孵化卵より得たる雛に對する實驗概括表

| 鳥種 | 雛數 | 肺臓移植數 | 不明數 | 陽性數 | 陽性率 | 肝臓移植數 | 不明數 | 陽性數 | 陽性率 |
|-----|----|-------|-----|-----|--------|-------|-----|-----|--------|
| 烏骨鶏 | 27 | 20 | 2 | 10 | 55.56% | 16 | 0 | 2 | 12.50% |
| 家鴨 | 10 | 12 | 4 | 2 | 25.00% | 10 | 0 | 1 | 10.00% |
| 珠鶏 | 6 | 2 | 0 | 0 | 0% | — | — | — | — |
| 吐綬鶏 | 8 | 6 | 2 | 1 | 25.00% | 6 | 2 | 0 | 0% |
| 鶉 | 4 | 4 | 0 | 2 | 50.00% | 4 | 0 | 1 | 25.00% |

私達の實驗に據ると同様の處置をした烏骨鶏雛 27 例、家鴨雛 10 例、珠鶏雛 6 例、吐綬鶏雛 8 例、鶉雛 4 例を得、之れを各々 3-30 日間飼育した。斯かる卵から發生した雛の體重は特に對照と變らないものが多いが、飼育の途中斃死するもの多く實際上用ひられたものは合計 38 例で、之れ各肺臓及肝臓を採つて家雛皮下に移植して其の腫瘍發生の如何を検した。即ち腫瘍移植後烏骨鶏の 2, 5, 14 日目の雛、吐綬鶏の 1 日目、家鴨の 1 日目、鶉の 5, 6 日目の雛の臓器移植に依て、明かに腫瘍を發生せしめ得た。而して其の移植率も表示せる如く烏骨鶏、鶉に於ては極めて高率を示す。腫瘍發生に就ては特に他の尋常移植の場合と差異がない。雛としては生存日數の永いものに於ては烏骨鶏の場合を除き毎に陰性であつて、斯かる成熟異種族動物の皮下に移植された起原と略々似た關係を呈した。肉眼的、組織學的に前回の實驗に於ては烏骨鶏雛の肝臓に腫瘍の特發發生あるを認めたが、本回の成績では全く斯るものを

見なかつた。即ち異種動物に於ては一般普遍的の胎嚢より特異性を發揮する成熟動物となれば自然に起原は排除されるか、消失するものも考へられる處である。ただ私達は各種臓器を移植材料として用ひなかつたから如何なる臓器に永く保有さるゝか又は何處から起原が排泄されるかは判然しない。

冷血動物及家鳩の家鶏肉腫との關係に關する文獻(鈴江氏等)の示す成績の如く一定時期は成熟動物に移植した時でも起原を保有するが、漸次消失排泄されるのみ、私達の所謂先天的に卵より受けたる起原の消失するのによく似たる所見を呈した。又之れに關係あるものとして哺乳動物(家兎)に對する家鶏肉腫起原の態度に就て實驗を行つた文獻(池田氏)があるが、之れに據ても24時間は起原を其の體内に保有し、注入後直ちに死滅するのではないと云はれて居る。是等から考へるに起原は特に體内で死滅消失するのではなくして異種動物に於ては、耐久性及組織親和力がなく自然に排泄されるのではなからうか、即ち、異種非移植動物には起原を滞留せしむる可き性質を缺いて居る爲で、家鶏のみはこの滞留の性能があるから組織は刺戟され、剩へ吾々の毎に云ふ組織亂調の動機が加はれば、滞留された起原はよく加働してこの部を腫瘍化せしめるものではなからうかとも思はれるのである。若し異種動物にしても何か滞留され得可き状態に持ち來しきへすれば腫瘍を作り得る可能性があらうかとも考へられる。網狀織内皮細胞系の機能が起原に耐抗し腫瘍起原の死滅するものも勿論關係あらむも、一方にはこの組織の滞留親和力の問題も大いに異種動物腫瘍移植成功を左右するものであり、この點は特に考慮を要す可きであらう。實際上網狀織内皮細胞系機能を封鎖せしめても、其れ程迄腫瘍組織の發生に關與せしめ得ないのを見ても想像がつく。曾て波多野氏は家鳩の皮下移植陽性の時には毎に脾臓の腫大を證明して居る。異種動物への移植時に脾臓の甚だ腫大するこゝは興味のある處で、この關係も亦起原保存に適當せしめる可き體質變換を意味したものではなからうか。

第三節 家鶏肉腫を成熟異種動物に移植し、之れより卵を得、其の卵の孵化胎嚢臓器移植實驗

家鶏肉腫の起原が全身性にあると云ふ藤浪、鈴江、大島、三尾、露木、大

田氏等の實驗を基礎として産卵期中にある雌家鶏に家鶏内腫を移植する。其後之れより得た卵内には起原があり、且つ卵内のみならず之れを孵化して、得た胎盤組織内にも起原の移行するを報告して以來、同様の實驗を更に友澤、二尾氏等と共に行ひ、池田氏は私達と關係なく大々的の追證を行つて同様の成績を得た。元來家鶏卵巢内には實驗上起原を多量に保有し得且つ腫瘍の卵巢組織内に轉移を好發するはよく認めらるゝ事實であつて、友澤氏に依て最近にも確證された事である。今回私達は前節實驗上異種動物卵内にも腫瘍起原は一定期間内存在し、且つ成熟鳥となり其の鳥類の特徴の現はれた後も一定期間は腫瘍起原を保有する事實を認めたから、進んで尋常皮下移植陰性である成熟異種動物の皮下、或は靜脈内へ腫瘍を移植した時に、之れと特異性のない卵との關係は如何に實驗を試みたのである。元來鳥骨鶏及鶉は成熟動物と雖も家鶏同様であり、時に家鴨は藤浪氏の實驗の如く無處置に於ても既に腫瘍移植陽性であるが、吾々の成績では未だ陽性を得た事がない。其他の吐經鶉、珠鶉は文獻上一定期間は腫瘍細胞は生活し且つ多少の増殖をも認め得られるやうであるが、移植陽性ではない。

私達は移植方法を靜脈内ミ皮下組織にミり、比較的移植後早期間に採卵して、卵内への腫瘍起原移行の如何を検索した。即ち卵を集めて之れを同一の孵化室内に於て孵化した。未受精卵は可及的完全に交配を行はしめた爲に比較的少なく、又卵そのものに加工を加へない爲に、腐敗、死卵を出す率も少なく、受精卵に於ては比較的正常卵ミ同一の發育を呈した。而して胎雛は之れを家鷄の皮下へ返還移植して起原の存否を検査した。卵ミ同種動物の成熟鳥類に移植するの實驗は到底不可能ミ考へて行はなかつた。今其の成績を表示するミ次の如し。

第5表 家鷄肉腫起原の異種族動物卵内移行に関する實驗成績表

[illegible]

| | | | | | | | | | | | | | |
|------|-------|-----|----|---|-----|--------------|---|---|-------|---|---|---|---------------|
| (10) | 3月10日 | 吐綬鷄 | 靜脈 | ⊖ | 3顆 | 移植翌日より14日間 | 2 | 0 | 15日 | 2 | 0 | 0 | |
| | " | " | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊖ | | | | | | | | | |
| (11) | 3月10日 | 烏骨鷄 | 皮下 | ⊕ | 5顆 | 移植後14日より10日間 | 2 | 1 | 18日 | 2 | 0 | 0 | 轉移なし |
| | " | " | " | ⊕ | | | | | | | | | |
| | " | " | " | ⊖ | | | | | | | | | |
| (12) | 4月10日 | 珠鷄 | 靜脈 | ⊖ | 3顆 | 移植翌日より10日間 | 0 | 0 | — | — | — | — | |
| | " | " | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊖ | | | | | | | | | |
| (13) | 5月10日 | 家鴨 | 靜脈 | ⊖ | 10顆 | 移植翌日より10日間 | 7 | 0 | 9日 | 4 | 0 | 2 | |
| | " | " | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊖ | | | | | | | | | |
| | " | " | " | ⊖ | | | | | | | | | |
| (14) | 5月10日 | 吐綬鷄 | 靜脈 | ⊖ | 4顆 | 10日間 | 0 | 0 | — | — | — | — | |
| | " | " | " | ⊖ | | | | | | | | | |
| (15) | 5月10日 | 鶉 | 皮下 | ⊕ | 2顆 | 不明 | 3 | 0 | 破殻をまつ | 4 | 0 | 1 | 強く腫瘍は纖維性。轉移なし |
| | " | " | " | ⊕ | | | | | | | | | |

上表により觀れば、極めて少數例ではあるが、或る状態に於ては陽性を呈したものがあつた。即ち之れを簡単に更に表をなすに次の如し。

第6表 家鷄肉腫起原の異種族動物卵内移行に関する實驗概括表

| 鳥種 | 使用雌數 | 採卵數 | 受精卵數 | 孵化後胎雛移植數 | 不明數 | 陽性數 | 陽性率 |
|-----|------|-----|------|----------|-----|-----|--------|
| 烏骨鷄 | 21 | 36 | 17 | 20 | 2 | 4 | 22.22% |
| 家鴨 | 21 | 30 | 13 | 8 | 0 | 2 | 25.00% |
| 珠鷄 | 9 | 14 | 3 | 6 | 2 | 0 | 0% |
| 吐綬鷄 | 8 | 12 | 5 | 4 | 2 | 0 | 0% |
| 鶉 | 2 | 2 | 1 | 4 | 0 | 1 | 25.00% |

腫瘍起原が卵巣を通過して卵に傳はり更に雛に移行し得るは度々報告し、他の追證者も認められた處である。然し之れは同種動物に於て實驗したのであつて他の動物では試みられて居ない。冷血動物或は植物に移植して又他の哺乳動物へ移植しても起原は一定期間だけは保たれることは文獻上の成績で明かであり、其の場合起原は如何なる道を通り排泄されるかは明かでなく、尿への排泄は哺乳動物にて池田氏も認めず、又實際上家鷄の場合に於ても尿

へ排泄される事は大田、波多野氏等の實驗に據て證明されては居るがこの數は極めて少なく尿中への排泄は少なくとも主道でない事は考へられる處である。卵巢は腫瘍起原に對し好親和性のある事は私の數度述べた處であり、從つて之れを通じてよく卵内へも移行するのであるが、異種族動物に於ては入れられた起原は腫瘍發生の不適當なる動物體内に於ても一定時間内は前記の如く無障礙に保有され得、又起原は卵巢に親和性を有するから之れより卵に傳はり、且つ特異性の少なき卵内に於ては容易に保たる可きは考へられる處である。然し果して異種族動物に於ての卵巢は同種動物と關係を同じくするか否かは不明である。

私達の前掲した表に依り觀るに各種の異種動物の皮下或は靜脈内に腫瘍材料を注射したものから、注射後翌日或は1週日から10-14日間に採卵したもの合計94顆を得、之れを全部各時期に孵化竈に收め受精の如何を検し其中39顆の受精卵を得た。元來家鶏に於ては産卵期にある雌家鶏は移植腫瘍の發育に伴つて産卵數を減じ卵の重量も減少するが、今回の實驗に於てはこの關係が特に認められて居ない。注射直後に産卵數の多少の減少あるは、ただの機械的影響に據ても勿論争はれない處であるが、之れは漸次恢復された。ただ烏骨鶏だけは家鶏と同様であつて皮下移植に由り、よく移植され且つ腫瘍の發育が旺盛なるに漸次産卵數が減少し卵重量も少なくなる傾向を示した。然し私達はこの産卵數の減少を數字的に現はすだけの實驗數を持て居ない。

而してこの孵化烏卵を孵化開始後7-21日目の雛の出る直前に人工的に破殼して其の胎雛の肺臟及肝臟を採取して之を成熟家鶏の皮下に移植して腫瘍組織の發生の如何を検した。即ち腫瘍起原が果して卵を通過して胎雛に移行したか否かを檢したのであるが、烏骨鶏に於て22.22%，家鴨にて25.0%，鶏にて25.0%の腫瘍發育陽性を得、珠鶏、吐綬鶏に於ては陰性成績を得た。即ち烏骨鶏、鶏、家鴨に於て産卵雌鳥より受けた起原は確かに卵内にも潜在するこゝが明白となつた。然し家鴨に於ては私達の實驗に於ては産卵家鴨臟器及胎雛組織内に於て腫瘍組織及細胞の存在を認め得なかつた。烏骨鶏では家鶏移植と同様であつて産卵雌鳥に於て腫瘍の發育は旺盛で轉移をも

構成された。腫瘍の組織像も特に大差がない。胎鶏臓器の移植に據つた腫瘍の發育状態は他の尋常移植の場合と同じく特に起原に強弱ある等は認められないやうである。以上の實驗成績は曾つて家鶏に於て同様な實驗を行つた時には24.3%の腫瘍起原の移行率を得た。家鶏と同様な皮下移植成績を示す烏骨鶏にありては、之れと近似の成績を得たが、他の動物では得られた數こそ之れに近いが、實際上使用した動物の數が少なく、この數字は陽性なる事だけは正確であるが、數字上正確を示すには尙ほ多數の實驗を重ねなくてはならない。即ち入れられたる起原は直ちに死滅せずして卵を通じて胎雛に移行することだけは明瞭である。一旦卵中に入れば腫瘍起原に對し卵は特異性がないから、發育中の胎雛を特に死に至らしめずして保留される事は明かである。

卵に對する障礙の程度は明かでない。數字から觀て受精率は對照より稍々下降する。表は總て「死に籠り」、腐敗卵を除外し實驗期間中を完全に觀察し得たもののみを挙げ、百分比も亦斯かる材料を以てなした爲に前掲の數字には技術巧拙の影響は少ないと思ふ。

第四節 哺乳動物腫瘍の孵化鳥卵内移植實驗竝に卵膜

上に腫瘍發育陽性卵の胎雛臓器移植實驗

哺乳動物腫瘍と家鶏肉腫とは形態學的には何れも人體の腫瘍と同様な像を呈して居るが生物學的には可成り違つた性質がある。即ち濾過性・乾燥に對する耐久力等は家鶏肉腫にはあるが、他の動物腫瘍には認められて居ない事實である。其の他の諸點からも兩者間には相當な距離がある事は認められて居る。然し孵化鳥卵内腫瘍移植に於ては清野氏初め多數の學者の實驗の示すが如く全く同様な關係にあつて、卵内では何れの腫瘍たるを問はず陽性である。私達も之れに對して數度の實驗を行つた事がある。又文獻上及前節多數の實驗の示すが如く卵膜上の腫瘍と起原の分布及異種族鳥卵に於ての同様の關係等もあるから私達は更に哺乳動物腫瘍として甘口鼠癌、白鼠肉腫、家兔肉腫の三種を選び、家鶏及一部は他の鳥類の孵化卵内へ腫瘍を移植して其の發育の状態を検し、陽性なるものは家鶏肉腫と同様の關係ありや否やに就て、之れを使用した腫瘍の同種動物に返還移植し又試みに家鶏にも移植して、其の

成績を觀察した。この實驗には極めて多數の孵化卵及動物を使用した。思ふ成績に到達し得なかつた。而して此處には本實驗として完全に成績を觀察し得たものゝみに表示して參考に供してみやう。又實驗には家鷄卵を主として用ひたが、他の家鴨卵、吐綫鷄卵も少數に使用した。之れは孵化家鷄卵に於て若し成績佳良なりせば多數の實驗を重ね可きであつたが、不良の爲本實驗を中止したのである。

第7表 哺乳動物腫瘍の孵化鳥卵内移植實驗成績表

| 實驗 回数 | 腫 瘍 種 | 卵 種 | 孵 化 開 始 月 日 | 移 植 後 日 數 | 卵 膜 及 胎 盤 腫 瘍 生 有 無 | 種 動 物 發 生 場 所 同 種 移 植 | 胎 盤 臟 器 (肺 及 肝) の 同 種 移 植 | | | 胎 盤 臟 器 (肺 及 肝) 鳥 類 移 植 | | | 備 考 |
|----------|-------------|--------|----------------------------|-----------------------|--|---|--|-------------|-------------|---|-------------|-------------|--------|
| | | | | | | | 移 植 數 | 不 明 數 | 陽 性 數 | 移 植 數 | 不 明 數 | 陽 性 數 | |
| (1) | 白鼠肉腫 | 家鷄 | 9月10日 | 11日 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 12日 | ⊕ | } ⊕ | 4 | 1 | 0 | } 4 | 0 | 0 | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | | | | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 甘口鼠癌 | 家鷄 | 9月21日 | 13日 | ⊕ | } ⊕ | 2 | 0 | 0 | } 4 | 0 | 0 | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | | | | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊕ | | | | | | | | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 〃 | ⊖ | — | — | — | — | — | — | — | |
| | 〃 | 〃 | 〃 | 15日 | ⊕ | — | 4 | 2 | 0 | 2 | 0 | 0 | |

| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
|------|------|-----|--------|-----|---|---|---|---|---|---|---|---|
| (7) | 白鼠肉腫 | 家鷄 | 10月22日 | 9日 | ⊕ | — | 3 | 0 | 0 | — | — | — |
| | ?? | ?? | ?? | ?? | ⊕ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| (8) | 家兔肉腫 | 家鷄 | 12月1日 | 12日 | ⊕ | — | 2 | 0 | 1 | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| (9) | 白鼠肉腫 | 家鷄 | 12月1日 | 14日 | ⊕ | — | 4 | 1 | 0 | 4 | 0 | 0 |
| | ?? | ?? | ?? | ?? | ⊕ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊕ | — | 2 | 0 | 0 | — | — | — |
| | ?? | ?? | ?? | ?? | ⊕ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊕ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊕ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊕ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| (10) | 甘口鼠癌 | 烏骨鷄 | 2月10日 | 10日 | ⊕ | ⊕ | 8 | 2 | 0 | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| (11) | 甘口鼠癌 | 家鷄 | 2月21日 | 13日 | ⊕ | — | 6 | 1 | 0 | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — |

大次移植後2週日小指頭

| | | | | | | | | | | | | | | |
|------|------|-----|-------|-----|---|---|---|---|---|---|---|---|---|---|
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| (12) | 家兎肉腫 | 家鶏 | 5月18日 | 11日 | ⊕ | } | ⊕ | 3 | 0 | 0 | } | 2 | 0 | 0 |
| | ?? | ?? | ?? | ?? | ⊕ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊖ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊖ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊖ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| | ?? | ?? | ?? | ?? | ⊖ | — | — | — | — | — | — | — | — | — |
| (13) | 白鼠肉腫 | 家鴨 | 6月10日 | 20日 | ⊕ | } | ⊕ | 8 | 2 | 0 | } | — | — | — |
| | ?? | ?? | ?? | ?? | ⊕ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊕ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊕ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊕ | — | — | — | — | — | — | — | — | — |
| (14) | 甘口鼠癌 | 吐經鶏 | 6月10日 | 18日 | ⊕ | } | — | 8 | 6 | 0 | } | 2 | 0 | 0 |
| | ?? | ?? | ?? | ?? | ⊕ | | | | | | | | | |
| | ?? | ?? | ?? | ?? | ⊕ | | | | | | | | | |

前表を簡単にするに次表の如し。

第8表 哺乳動物腫瘍孵化鳥卵内移植實驗概括表

| 腫瘍種 | 使用卵數 | 卵膜腫瘍發生陽性數 | 陽性率 | 胎種植雄動物同移 | 不明數 | 陽性數 |
|-------|----------------------------|----------------------------|--------|----------|-----|-----|
| 家兎肉腫 | 28 (鶏卵) | 4 | 14.28% | 7 | 0 | 1? |
| 白鼠肉腫 | 49 (家鴨 5) | 16 (家鴨 5) | 32.65% | 21 | 4 | 0 |
| 甘口鼠癌腫 | 53 (烏骨鶏卵 6) (吐經鶏卵 3) | 13 (烏骨鶏卵 1) (吐經鶏卵 3) | 24.50% | 47 | 19 | 0 |

上表に據て觀るに哺乳動物腫瘍は雖も其の14.28-32.65%に家鷄卵其他の卵内に腫瘍の移植が陽性であつて、この成績は文獻上のものと全く同一である。發生した腫瘍の組織像は原種動物腫瘍の像と異ならない。胎盤組織臓器内には腫瘍の轉移を肉眼的及び組織學的に證明しない。

而して私達は家鷄肉腫の經驗上同様な事を哺乳動物腫瘍で行はんとして、卵膜に腫瘍の陽性であつたものゝ胎盤を用ひ同種動物の皮下に返還移植して腫瘍芽の胎盤組織内に移行して居るか否かを檢したのである。この使用動物数は家兎7例、廿口鼠47例、白鼠21例であつたが、其の中家兎肉腫を以ての實驗に於て1例、表にも示したやうに家鷄卵内に移植して12日後の卵膜に腫瘍發育陽性のものゝ胎盤臓器を移植した時に偶然に同一種の腫瘍發生を移植後2週目に於て初めて認め得た。この腫瘍は後尋常の發育度を呈した。本例は恐らく偶然の事であらうが、胎盤の血管内に腫瘍細胞の轉移があるものとすれば當然なる成績とも考へられる。然し之れは僅か一例であるから恐らく哺乳動物腫瘍芽は胎盤組織内へは移行せず限局性のものであると考へられる。哺乳動物腫瘍は家鷄肉腫とは他に既に明にされた生物學的性質の相異あり、又本實驗上から觀ても之れを同一には論及されない。孵化卵内では種屬特異性が少なく又はないからして胎盤内に直接接種さるれば、其の部位に腫瘍發生を見ることも可能性があるのであらうが、全身的に起原或は腫瘍芽の分布される事は家鷄肉腫に限られたる性質と見做す可きを隱當としやう。即ち本種實驗は頗る興味を以て注意したるも陰性の結果を得た。唯だ一例の家兎に於て同上實驗陽性成績があるが之れは偶然のものであり又或は誤つて腫瘍芽が混入されたものかも知れない。

第四章 實驗總括

私達は家鷄以外の鳥類孵化卵内(烏骨鷄卵、家鴨卵、珠鷄卵、吐綫鷄卵、鶉卵)へ家鷄肉腫を移植し文獻の既に示すが如く、何れも卵膜上に腫瘍の發育陽性を得た。其の頻度は家鷄卵の場合に比較するに良好ではない。次に進んで私達は此の異種鳥類孵化卵内へ移植し陽性を得た場合に於て卵膜に發生した腫瘍は特に該部のみに起原が限局するのみならず胎盤組織内にも起原が彌蔓

して居るか否かを檢せんが爲に、卵膜に腫瘍發育陽性例の胎雛の肺臓及肝臓を各時期に採り出して成熟家鶏の皮下に移植して起原の存在及腫瘍發生の有無を檢查した。是等動物は成熟動物である場合に於ては腫瘍の形成が陰性である處からして必要な實驗と思はれる。其の成績では又家鶏卵を用ひた時と同様に肺臓、肝臓共に毎に陽性であつた。即ち孵化の時期には特別に關係はなく異種孵化鳥卵の胎雛内に於ては家鶏を用ひた時と同様な成績を示し、且つ其の頻度も家鶏の時の夫れと同様である事を明に知り得たのである。即ち本實驗では家鶏卵たるも異種鳥卵たるを問はず、移植した場合は毎に卵内胎雛組織に起原が彌蔓して居るのを明瞭に知り得たのである。要するに胎生期は常に卵膜に於ける限局部のみならず全身的に腫瘍に對し種族特異性を現はさない事が認められた。斯るが故に私は更に孵化期中の卵内に腫瘍を移植して孵化満期になつて外界へ出で、即ち成熟鳥類としての特徴を一時でも發現すれば、成熟鳥類皮下に移植した時と同様に陰性態度を取るか否かに就て研索した。即ち孵化期中の卵へ移植し雛として發生した動物の肺臓及肝臓を採つて移植したのであるが、之れに據るも鳥骨組織の發生後2日目の肺臓、鶉雛の同様3日目の肝臓、鳥骨鶉雛の5日目の肺臓及肝臓、鶉雛の6日目の肺臓、吐綬鶉雛の1日目の肺臓、鳥骨鶉雛の2日目の肺臓、家鴨雛の1日目の肺臓及肝臓、鳥骨鶉雛の14日目の肺臓に於て陽性成績を得た。鳥骨鶉及鶉の雛を除いて他の家鴨、吐綬鶉、珠鶉雛に於ては發生後3日以上を經過したものには私達の實驗では盡く陰性に終つて居る。實驗は尙ほ其れ以上の時日後のものをも用ひたが、是等は陰性に終つた。即ち私達のこの小實驗を以て觀るも孵化後に其の鳥類としての特徴を現はしても數日間は體內に起原を保有し得るが、其の後漸次消失される。而してその保有時日は相當に短期間にて僅に數日間に過ぎない。即ち胎生期の一般的普遍的腫瘍の特性が其の動物の特徴が現はれと共に破壊され行くものとやうに考へられるのである。鳥骨鶉や鶉に於ては成熟動物皮下移植も雖も陽性であるからこの關係は少しく他の動物とは趣を異にして居る。孵化家鶏卵内に移植して雛として產出された時に、家鶏卵を用ひたる時には可成り特發生に腫瘍結節が雛臓器内に發生するを友澤

氏と共に實驗上認めたが、今回の實驗では斯かるものを1例も見ず、總て肉眼的は勿論、組織學的にも腫瘍組織及細胞を證明し得なかつた。異種屬動物の移植に於ても肺臓に於て多く肝臓に少ない。腎臓及腸管其他排泄部も見做される部位の悉くを調査しなかつたから、何れの臓器が比較的長く保ち得るかは判然しない。兎に角本實驗では異種非移植動物に於ては起原に對し抵抗するか或は起原の存在に對して不適當みなさしむるかに依り動物體內を漸次去る事は明瞭である。家鴨に於て陽性を見、吐綬鷄、珠鷄に陰性であつたのは多分實驗の關係もあるであらうが、家鴨に於て多少の特種性を缺くか否かは明かではない。是等は文獻上にもある如く冷血動物で行はれ又家鳩で觀察せられた起原の消失關係とも似て居る處であると思ふ。兎に角孵化後の發育と共に起原の消失するは興味ある處である。

以上のやうな關係があるから成熟動物に於て毎に陰性である動物でも、卵巢及卵の關係だけは多少他の性狀と異にして居る爲め、若し移植不成功な動物までも文獻の示す如く幾分の間、起原保有を認めるからには靜脈内に入れられた起原が卵巢を通過して卵へ移行し、卵は非種屬性を示す組織であるから起原は其儘に保存されるか否かを檢せんが爲に、曾て私が家鷄で行つた實驗の如く異種屬動物として珠鷄、吐綬鷄、家鴨及烏骨鷄、鶉を用ひて、移植後ある一定期間(比較的早く)の産卵を採取し、其れを孵化し一定の時に胎雛を取り出して他へ移植して起原の移行關係を調査したのである。烏骨鷄及鶉は既に數回述べた如く皮下移植が家鷄と殆んど同様に成功するが爲に、是等には皮下移植を行つた。而してこの兩者は毎に今回の實驗に於ても腫瘍を皮下或は内臓に作り得て居るが他の異種屬鳥類に於ては肉眼的にも、一部組織學的にも腫瘍發生を證明しなかつた。本實驗に於て採卵したものの中から、其の胎雛移植に於て家鴨の靜脈内へ腫瘍材料を注入した實驗に於て孵化9日目卵より1例の陽性を得又烏骨鷄、鶉に於ては相當に多數陽性成績を得た。他の鳥卵に於ては陽性成績を得なかつた。之れより觀るに家鴨の靜脈内へ注射された起原は卵巢或は其他を通じて卵に移行したものと考えられる。成熟動物に於ては皮下移植陽性ではないが、卵の如き特異性のないものにはこの關係を

同一にし得ない。移植した雌鳥の産んだ卵に於ては未受精卵が多少多いが、同種動物たる家鶏の如く明かではなく又卵の重量及産卵率等にも大なる影響はない。

以上私等の述べ來つた處は全部生物學的に特異性のある家鶏肉腫の場合であるが孵化家鶏卵内には清野、川上其他の諸氏の實驗ある如く哺乳動物腫瘍がよく移植され得る。私の實驗に於ても極めてよく移植せられ、今回甘口鼠癌、白鼠肉腫を移植し又未だ卵内移植經驗の少ない家兎肉腫でも28個中10個の陽性を得て居る。即ち卵生期は腫瘍に對して極めて廣い一般性的の特種性の缺除が事實上證明され得る。斯るが故に私は家鶏肉腫を對照せんが爲に全く同様な實驗を哺乳動物腫瘍で行つてみたのである。蓋し斯る哺乳動物腫瘍は腫瘍發生に當つて腫瘍細胞を必要とし家鶏肉腫の如き濾過性を缺除し、又私達實驗上成熟動物に於て、是等の腫瘍は全身的に起原の存在性を缺いて居るから、よし特異性のない卵であるとは雖も恐らく同様な關係は存在しないものと思惟して居たが、私等の實驗上では是等の腫瘍は卵膜上には極めて良好な腫瘍發育を認めたが、胎雄臟器の同種動物返還實驗では完全な腫瘍發育を認めた例がない。唯だ1例の家兎肉腫移植實驗に於て1個陽性のものがあるが、之れは成績こそ陽性に出て居るが、之れを以て直ちに全部が陽性であるとは云ひ得ない。即ち偶然か或は腫瘍細胞の誤入の虞れが全く否定せられ得ないからの事である。以上の成績から云ふ哺乳動物腫瘍移植の時は移植局處には確かに腫瘍組織の發育陽性であるが、家鶏肉腫の如く起原の濾過性の存在はない。之れを以て觀るに家鶏肉腫と他の哺乳動物腫瘍との間には生物學上相當のひらきがある事明かである。然し若し胎雄の血管内に腫瘍細胞の一片が轉移し存在するすれば當然移植されるものであらう。私達の實驗に於ては多數の組織標本上未だ腫瘍組織及細胞を認めたものがない。要するに哺乳動物腫瘍と家鶏肉腫とは以上の實驗上全然同一に論ずる事が出来ない成績に到達した。形態學上こそ家鶏肉腫を一般腫瘍と見做す可き事、疑もなく藤浪氏も云はれて居る處であるが、種々なる生物學的性質の上から家鶏肉腫だけは多少特殊扱にする要もあるやうに考へられるのである。

第5章 結 論

家鶏肉腫の異種屬動物移植は最近多少移植部位の選擇により、或は特に何等の處置を加へずしても成功する等の實驗があつて漸次特種性が失はれ行く感があるが、今日尚ほ、異種屬動物移植は決して容易ではない。且つ何が故に腫瘍に種屬特有性をしかく強有するかに就ては未だ論議が一定しない。然し既に文獻上何人も認むるが如く胎生期に於ては腫瘍の移植可能に或程度まで特異性がなく、哺乳動物腫瘍さても鳥類卵内に容易に移植され得る。然れども未だ腫瘍起原が移植されたる限局部のみに存するか或は家鶏に於けるが如く卵膜上に腫瘍組織の發育せるものは胎兒組織内に迄起原が移植し居るかに就ては頗る興味のある處であるが、私等の實驗に於ては起原は前述の如く家鶏さ何等變りはない状態に於て分布する。之れ種屬上何等の差異を示さず、唯だ其の成績上多少家鶏の成績に劣つて居るのみである。然れども之れが難さして發生した時に於ては如何、即ち各々鳥類さしての特徴が發現すれば、この起原は如何になり行くか、私の實驗では發生した難は異種屬であつても一定期間は體内に保有されるが、これがある一定期を経過すれば腫瘍の發現性を消失してしまふ、即ち排泄されるか或は破壊せられるかは判然しないが、兎に角腫瘍の發生力を失つてしまふ事は前述の實驗上明かである。然しこの際、腫瘍起原が異種屬動物體内へ入ても直ちに死滅されること云ふ事は考へられなない。自然に排泄されるだらう事は文獻上の成績又私達の今度の實驗に據ても明瞭である。特殊性のない胎生期組織内に異種動物腫瘍の悉くが移植される事は文獻上の成績でも同様であるが、起原の方面から云つても亦同様な關係があり、孵化後即ち各鳥類の特徴が發現した後に於ては消失し、成熟動物へ直接移植した場合も同様な状態である。即ち所謂先天的に得た起原さても又消失するのである。私の母體移植により得られた胎難内の起原保有の關係も亦異種屬動物へ入れられた起原が直ちに死滅されるものでない事を物語つて居る。たゞ異種屬動物で腫瘍發育は陽性でないにしても、卵内へ起原の移行する事は家鶏を以てなされた成績より勿論少ないが可能性は充分ある。私達の實驗中、鳥骨類を用ひての實驗を記載したが本鳥類は今氏の述べられた如

く家鶏と同一の成績を得、又私達の實驗も同様で本鳥類は少く共家鶏肉腫に對する生物學的性狀に於ては普通家鶏と同一又は近似の種と見做す可きであらう。要するに家鶏に於ける卵内實驗は異種屬鳥卵に於けると同様であり、一度び雛として生育してからは家鶏では永い間起原を保有し得るが異種屬動物では起原を早期に消失する。之れ種屬特徴の發現に關係し種屬免疫(免疫の意味は多少異なつては居るが)と云ふ事も考へなくてはならない事實であらう。この種屬特異の發現關係に就て清野氏は曾て孵化異種卵内へ腫瘍を移植して陽性成績を得られ卵内及胎兒に於ては成熟動物種屬の完成前は特異性の無い事を主張され、移植腫瘍の異種屬免疫若しくは不感受性は Ontogenie の進むにつれて進化發達し、即ち二種の生殖細胞並に二種生殖細胞の合一に據りてなつた原始動物細胞は既に一定度迄種屬特異性があるが、然し此種屬特異性は成熟動物に比較すると遙かに輕微である。Ontogenie が進んで動物體の進化、發達すると共に動物は個體としても亦動物體を構成する個々の組織細胞に於ても、其の形態と機能とに於て各特有の分化、獨立がある。而して分化なるものは一定特殊の目的に向つては特異であると共に、目的以外の事項に向つては普遍性でない性質を帶ぶ。反之未分化なるものは特殊目的に全力を傾注するには不便であるが目的以外の事物に向つては通有な若しくは普遍なる性質がある。されば Ontogenie の初期即ち胎兒の時期に於ては異種屬腫瘍を包括して恰も同種屬腫瘍の移植に於けるが如く發育榮養するところは動物の形態が未分化状態に在ると同じく其の機能に於ても亦未分化、普遍性なりと思考し得られる。夫れであるら、若い動物は年老いたるものよりは種屬特異性は微弱であり、又同一の動物間でも肉腫に對する感受性に數量的差異のあるは種屬特異性の分化發育が個々の動物に於て必ずしも同程度、同速度に行はれて居ない爲であらう。種の適應即ち生活細胞若しくは細胞の集合に據てなれる個體が外界の状態に適應し行く事が生物進化の上に於て動かす可からざる法則である。爲に本實驗に於て未分化細胞からして分化細胞即ち成熟動物に迄發達進化すると、普遍性であつた腫瘍起原に對する感受性が失はれて特異性を呈するが、動物は雛として發生したばかりであるから、其の

種屬性を完全に示さない時だけ起原を有し、後漸次に失はれるものであると考へられる。唯だ鳥背鶏及鶏に於ける關係は成熟動物でも移植され得るから多少趣を異にし、藤浪、井上氏の云ふ如く家鴨に於ける移植可能もある今日、この實驗は是等も参照しなくてはならないだらうと思ふ。

要するに未だ其の具體的證明はないが、未分化時代から成熟時代迄を經過を追つて起原の失はれ行く状態を見るには、この種實驗は好個のものであり、種屬特異性の發現の明なるは以て興味ありとする處である。

最後に哺乳動物腫瘍は孵化卵内に移植可能である事は再三述べた處で、本實驗の成績も夫れを示して居るが、是等の腫瘍と家鶏肉腫との間には生物學的に相當に差異がある。私達の實驗に於ても亦之れと同じく孵化卵内の状態でも家鶏肉腫の成績の夫れと大なる差異がある。即ち彼れは腫瘍芽が移植部に局限されて居るのに家鶏肉腫の起原は普遍的である。濾過實驗或は其他は家鶏肉腫以外の腫瘍には認められない性質である。即ち形態學的には家鶏肉腫は腫瘍として疑のなきこと多數の學者により承認されて居るが、生物學的には同一に論及し得ざる點が多々ある事は之れを以ても明かである。以上の如くであるから家鶏肉腫の生物學的研究成績を以て一般腫瘍に悉く歸納せしめることには聊か躊躇しなくてはならない。實だ本種實驗上家兎に陽性なるは時に家兎肉腫がよく轉移し易い性質を有する處から、卵膜に原發發生した腫瘍組織から腫瘍細胞が離脱して血管内に存したる時もあることを考へに置かなくてはならない。

摘 要

私は昭和2年以來家鶏卵内に移植した家鶏肉腫の起原は胎嚢に傳はり、又家鶏肉腫雌家鶏の生める卵内には起原を保有し、且つ嚢に傳はり得る事を數回に亙つて報告したが、今回は成熟鳥類に移植しては普通皮下移植に據て陰性である可き鳥種の孵化卵内に移植し、且つ同産卵期にある雌鳥に家鶏肉腫材料を注入し、其れより卵を得、卵内に起原の存在するか否かを檢し、更に哺乳動物腫瘍移植と卵内胎嚢との關係に就て檢索した。次に私達の得た成績の概要を摘録する。

(1) 孵化家鴨、烏骨鶏、吐綬鶏、珠鶏卵内には孵化家鶏卵内移植に於けるよりは低率ではあるがよく家鶏肉腫を移植し得る。この場合主として卵膜に腫瘍の形成を見る。組織像は特に家鶏卵を用いた時と異ならない。異種族卵胎雛に自然に轉移を構成したものは今回の實驗では存在しない。

(2) 卵膜に腫瘍陽性である異種族鳥卵の胎雛には起原を保有する事、家鶏同種卵を用いた時と同様である。本實驗中烏骨鶏を異種族動物として取扱ふ事は疑ひなき能はない。本鳥種は生物學上、家鶏と同様に見做す可きを以て穩當とする。

(3) 異種族動物胎雛の臓器内起原の分布は肺臓に於ける方、肝臓に於けるより高率である。

(4) 異種族動物胎雛内にある起原までも家鶏卵内移植時の胎雛其他と強弱に於て差異を示さない。又他種類の細胞假令は烏骨鶏に於ける色素細胞の如き細胞をして増殖せしめ得ない。

(5) 異種族孵化鳥卵内に家鶏肉腫を移植するも續ひて孵化を繼續すれば完全に孵化を終へて雛となり産出し得る。今回の實驗では發生直後の雛には肉眼的組織學的に特に腫瘍を形成したものが無い。然れども該雛の體内に於ては珠鶏を除く外 尚ほ 1-3 日間は起原を保有する事を實驗的に證明し得た。永い後のものに於ては起原の保有がない。即ち起原は一定期間後恐らく排泄、消失されるものであらうと思はれる。排泄の王道は今日尚ほ明かではない。

(6) 異種族鳥類にして皮下移植性なる烏骨鶏及び鶉並に陰性成績を示す吐綬鶏、珠鶏、家鴨の何れも産卵期にある雌鳥の皮下或は靜脈内に家鶏肉腫に移植し、其の動物から一定期間内に採卵し、之を孵化竈に入れ胎雛内に起原の存在有無を検したるに烏骨鶏、鶉、家鴨に於て起原の存在を家鶏體内返還移植に由り確め得た。之れに據て腫瘍を増殖せしめ得ない異種族動物體内に入れられた起原までも注入後直ちに死滅消失するものではなく、卵巢を通過して卵にも移り行き特殊性のない卵内に入りては其の儘或は増殖して、胎兒には特別の障礙を與ふるこゝ少なく一胎雛内に保存せられ得るこゝ明瞭である。

(7) 起原は異種動物体内に入れられて直ちに消滅せず一定期間だけは保留、存在される。即ち腫瘍に對する不感受性は起原を保有せしめ得ざるに依るか或は組織、臓器の不感受性であつて、起原をして直ちに体内に於て死滅せしむるものさ考へない方がよいのではなからうか。

(8) 腫瘍の特殊性は成熟異種動物に於て認められるが胎嚢内では普遍的であつて特殊性がない。然し雛として孵化し一旦各々鳥類としての特徴を現はすに至る次第に特殊性が現はれ起原は排除される。即ち先天的に得た起原までも孵化後各鳥類の特徴の發現するに據て除去されること明白である。具體的に如何なる方法で消失されるかは今日證明されて居ない。

(9) 家兎肉腫、甘口鼠癌腫、白鼠肉腫は容易に家鶏、烏骨鶏、家鴨、吐綫鶏卵膜に移植され得る。然し胎嚢に轉移を認め得たものは1例もない。又組織學的にも腫瘍細胞及組織を認めたものがない。

(10) 卵膜に哺乳動物腫瘍の移植陽性なる胎嚢臓器を其の同種動物に移植して胎嚢臓器、組織内に腫瘍と同一芽の存在するか否かの實驗をしたが悉く陰性であつて、即ち家鶏肉腫は生物學的性質上相違のある事を認め得た。之れも亦家鶏肉腫の生物學的成績を直ちに哺乳動物腫瘍に適用するには聊か躊躇しなければならない一つの證明であると思ふ。

擱筆に當り木村教授の御校閲を深謝す。

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甲状腺纖維腺腫の一例

(圖版 XVIII)

小 峰 善 茂

東京帝國大學病理學教室

Ein Fall von Schilddrüsenfibroadenom.

Von

Y. Komine.

(Aus dem Pathologischen Institut der Kaiserlichen Universität zu Tokyo.)

Mit Tafel.

Es handelt sich um eine 45 jährige stark abgemagerte Frau, die an der Pneumonie starb. Bei der Obduktion bemerkte man zufällig einen daumenspitzen grossen Tumor am unteren Teil des linken Schilddrüsenlappens.

Seine Konsistenz war derb, die Farbe seiner Oberfläche war grauweiss, und die seiner Schnittfläche zum grössten Teil grauweiss, herdenweise aber gelblich. Der Tumor war durch eine deutliche Kapsel gegen das ihn umgebende Gewebe abgegrenzt. Die Kapsel war halbdurchsichtig und zum Teil verkalkt.

Histologisch erwies sich der Tumor als Fibroadenom. Das interstitielle Bindegewebe war stark degeneriert, es war homogen und kernarm.

Die Degeneration in diesem Tumor zeigte sich stärker in der Peripherie als im Zentrum. Die Follikeln waren zahlreicher im Zentrum als in der Peripherie, aber die Mehrzahl der Follikel epithelien zeigten keine Degeneration. Es bestand adenomatöses Gewebe, welches sich aus kolloidhaltigen Follikeln, leeren kleinen Follikeln, und noch undifferentierten Drüsenzellennestern zusammengesetzt war. In der Stroma konnte man hier und dort kapillarenreiche Stellen

beobachten; die Kapillaren waren mit Blutzellen ausgefüllt. In der Stroma und im Follikel befanden sich einige Blutungsstellen.

Über die Entstehung des Schilddrüsenadenoms bestanden bisher verschiedene Theorien: Wölfler (Adenoma foetale), Ribbert (Epithelkeim), Aschoff (Adenomkeim) behaupteten, dass die embryonale Anlage die Ursache ist. Hitzig, Michaud, Vogel widerlegten die obigen Theorien. Ich möchte hier nicht argumentieren, ob diese Theorien richtig sind oder nicht, aber möchte nur sagen, dass falls auch dieser Tumor in der embryonalen Periode nicht entstanden ist, er sich im sehr frühen Stadium des Kindsealters entwickelt haben muss.

(Autoreferat.)

Erklärung d. Abbildungen.

Fig. 1. Schilddrüse (von hinten gesehen) a. Geschwulst.

Fig. 2. Kalkablagerung in der Kapsel des Tumors.

Fig. 3. Geschwulst a. kolloidhaltigen Follikel. b. kleine leere Föllikel. c. kernarme Stroma.

臨牀上シモンズ氏病の疑をおかれ小葉性肺炎症の下に死亡したる1例を剖検せしに、甲狀腺左葉の下端に拇指頭大の結節あり鏡檢するに纖維腺腫ともいふべき像を呈するも、間質結締組織の甚だ高度の變性に陥れる者を認めた。

大樋某 女 45歳 院外。

臨牀的診斷 小葉性肺炎(シモンズ氏病?)

家族歴 特別の事なし。

既往歴 2歳の時に麻疹にかゝり7歳の時に癩をやみ、其後輕度の構音障害(呐吃)あり。2-3年前より漸次衰弱し、又足具合が悪くなり歩行不自由となりたりといふ、未だ結婚せず。ロ氏反應は(±)なり。

現在症狀竝に經過 患者は體格小虛弱なる骨格を有し、皮膚は蒼白にして中等度に濕潤し異常著色等を認めず、脂肪層は減少す。脈搏は規則正しけれども緊張は弱く小且弱なり。血壓は105耗。腱反射は兩側共に減少し辛じて證しうる位なり。基礎代謝

は減少、兩側共に軽度の眼球突出症あり、乍併其他の眼症状は全く存せず。頭部は狭少にして甲状腺の腫大を認めず、1933年2月12日に下痢をなこし、翌13日發熱(39度8分)と呼吸困難となり、兩胸側後面にて小泡性囉音を聞き殊に左に多く、爾後熱は38度-40度8分を上下し、2月15日夜死亡せり。

解剖的診斷

- (1) 甲状腺纖維腺腫。
- (2) 兩側性小葉性肺炎。
- (3) 右側全癒著性肋膜炎竝に左側限局性肋膜炎。
- (4) 子宮底に於ける鶏卵大、子宮體に於ける鶯卵大の各1箇の筋腫。
- (5) 副腎皮質の類脂肪體減少。
- (6) 鬱血肝竝に肝臓左葉後部の肝周圍炎。
- (7) 心筋の褐色色素沈著。
- (8) 兩側性鬱血腎。
- (9) 軽度の脾腫。

解剖的所見

外部所見 特記すべき事なし。

甲状腺

大體正常大にして表面滑澤なるも多少の凹凸不同あり。靜脈網を可成り著明に認め得、弾力性硬固にして被膜は稍々肥厚す。色は大部分赤褐色なるも、左葉の下端に表面よりみて雀卵大より稍々大なる結節あり、その硬度は正常の部分より稍々硬し、其所にては腫瘍の上方は正常甲状腺中に入り込み、外部よりは其上端をみる事能はず。甲状腺の長軸に沿うて割を加へみるに、腫瘍の大きさは約拇指頭大にして、その外端は相當に厚き半透明の殆んぞ硝子様にみゆる纖維被膜にてつまれ、周圍組織は明瞭に境さる。此の被膜の一部分に石灰沈著を來たせる所あり、切斷面に於ては半透明の纖維が相當に厚く存し、其間に小豆大、米粒大、半粒大等の腔形成をみる。下方の腔はその中に何物も存せざる者多きも、上方の者は多くはその中に黄白色脂腺様の物質を以て充たされ居るを見る。切斷面に於ける他の部分をみるに赤褐色を呈し、何處も緻密なる實質組織よりなる。右葉には全然變化なく且甲状腺は何

處にも癒著なし。

甲状腺組織學的所見。

腫瘍以外の部は濾胞の形は不規則なるも、著明なる大小の差なくいづれも膠質相當に存す。空胞形成をなせる所或は雲絮状をなせる者、稀薄なる者等は尠し。濾胞上皮も扁平にして、間質結締組織の増加もなく其他著變なし。

腫瘍部 外側は厚き結締組織にてつゝまれ此の被膜中に、石灰化せる所數ヶ所存す。被膜中には殆んど細胞なく均質化したる纖維にして、たゞ僅に腫瘍の上端甲状腺組織中に突入せる所に於て、その縁或は縁の附近に微に紡錘形細胞を認むる所あり。結節の内部には所によりては、正常甲状腺組織の如くに膠質を保有せし濾胞の集り居る所あるも、殆んど全部の所に硝子様化したる纖維をみる。濾胞の集り居る間に太き束状をなして硝子様化したる纖維の走る所、硝子様化したる組織の中に疎に、或は相當の間隔ををきて濾胞の存する所あり。纖維が網目状に走り、その縁に沿うて濾胞上皮を認むる所あり。全く硝子様化したる結締組織よりなり全然濾胞を認めざる所、濾胞の痕跡的に存する所等あり。中央部にては此の纖維が長短、細太不同の束状をなして縦横に錯綜し、その間に濾胞の存する所、或は濾胞形成をなさず、濾胞上皮細胞の集簇を思はるゝ細胞の存する所もあり。是等の濾胞は其の形態大さは著明の差異を認むれども、壓迫壊死に陥る傾向は大部分の所にては之を認めず。膠質を含有せる者も相當に存す。濾胞中又は間質中に出血せるかと思はるゝ所も所々に存し、又血液細胞にて充たされたる毛細血管も相當にみる。縁の一部分には、血液細胞にて充たされし間隙又は毛細血管、紡錘形細胞相當に存し肉芽組織を思はしむる所も存す。此の標本にては退行變性の度は周邊部に強くして、中央部には比較的弱く、腫瘍に他の割を加へみるに外方に近き所程硝子様化したる纖維多くなり、中心部に近き所程濾胞の多きを認む。

心臓 約屍手拳大、心室心房の擴張は此れを認めず。心筋は褐色を帶び潤濁す。心筋は何れにも硬結は認められず。鏡見するに著明の心筋斷裂、褐色色素沈着を認む。

脂肪變性，心筋萎縮等は認められず。

肺臓 兩側肋膜腔内に異常液體の貯溜を認めず。右側は胸壁と全癒着をなし，左側は尖端及び後面の一部分癒着せるをみる。兩肺共に略同一の性質を示めし，硬度は後面に於て稍増加し，剖面は暗赤色にして，所々竈狀に硬度増加せる所あるをみる。鏡檢するに所々に存する氣管枝中には，多核白血球，喰食細胞，赤血球，剝離せる上皮細胞等つまり居り，壁に炎症性細胞浸潤をみる所あり。その周圍の肺胞中にも前記の種々の細胞のつまり居る所存し，それより稍離れたる所に水腫を認む。これらの肺胞壁には著明の充血あり，所々壁肥厚し，一部分にては著明の血管新生を認む。

大動脈 硬化の度甚だ低し。

肝臓 稍縮少し表面に微細なる凹凸を認め，後部は横隔膜と纖維性に癒着す。硬度は多少増加す。剖面褐黃色相當の鬱血をみる。鏡見するに被膜稍肥厚し，中等度の汎發性脂肪變性を認め，毛細血管擴張し赤血球にて充たされ居るをみる。

腎臓 兩側共に略同一の性質を示めす。被膜の剝離容易なるも，2,3箇所に於て癒着あり。表面大體滑澤にして，星芒狀靜脈像を認め得。剖面赤褐色を呈し，稍潤濁し皮質は稍狭し。鏡見するに汎發性鬱血を認め，一部分にては細尿管が壞死に陥り核消失を來たし，又潤濁腫脹をなこし，殆んど管腔の消滅を來たせし所もあり。又所々に不規則なる脂肪變性を認む。

脾臓 正常大より稍肥大す。莢膜は緊張せず剖面暗赤色を呈し，脾髓は潤濁し軟なり。濾胞は認め難く，脾材は稍増加す。鏡見するに脾竇は擴張せるも，現在にては赤血球は殆んどなく，脾髓は萎縮す。

腺臓 黄褐色を呈し表面分葉造構を示めし，硬度も増加せず，肉眼的に認むべき異常なし。鏡見するに腺細胞中に大なる脂肪球を認む。其の他著變なし。

副腎 皮質に於ける類脂肪體減少す。髓質の死後變化相當に強し。鏡見するに網狀層の色素を著明に認む。皮質，髓質共に鬱血を認め，其の境界は比較的不明瞭なり。髓質の中心靜脈は相當に擴張す。

卵巣 表面は皺襞に富み，兩側共に各數個の小なる變性濾胞が存す。その他著變なし。

松果腺 異常なし。

腦下垂體 肉眼的には尋常，又その附近にも全然變化を認めず。鏡見するに前葉に膠質を相當に認む。前葉中間葉に少し充血あり。エウジン嗜好細胞は減少するも，鹽基性細胞，色素嫌氣性細胞の増加は認められず。

腦髓 著變を認めず。

考 按

之を要するに本腫瘍は，相當に厚き被膜を以て周圍組織とは明かに區劃され，間質結締組織相當に高度に増殖し，濾胞其の間に散在し纖維腺腫とも認

むべき像を呈するも、通常の腫瘍と異なる所は、間質は相當高度の變性に陥り、殆んど細胞を認むる事能はざる位なるに反して、濾胞上皮のよく保有せられ居る點、間質變性度を中心部と周邊部とに於て比するに殆んど差なく、周邊部に石灰沈著せる所を見、かへつて周邊部の方變性度強きかと思はれる程なるも、濾胞は中心部の方は未完成の者多きも、周邊部には膠質を保有する完成せる濾胞少からず。

1883 年 WÖLFLE 氏は BILLROTH の教室にて手術されし、甲状腺腫 12 例に於て胎生期組織と類似の構造を有する腺腫を認め、それを遺殘胎生組織よりなる者とせり、而して此胎生期組織に類似する未分化の腺細胞集簇は、生理的の胎生期甲状腺組織と同一なる發育をこけ、濾胞形成に至る者にして、夫より普通の腺腫形成に至る者ならんと推せり。又同氏は腺腫實質内に、腦に於けるが如き毛細管出血をおこし、その出血竈に結締組織増殖し、それが瘢痕化し其處に濾胞の再成を來たし、時には此の出血竈中に濾胞の島嶼狀に残存せる者ある事を述べたり。著者の例は WÖLFLE 氏の胎生の細胞竈ありて、そこに lacunare Vascularisation を認めし例に比すれば、更に發育のすみたる者なるも所々に存する毛細血管はいづれも血球にて充たされ且濾胞中にも間質中にも出血せしと思はれる所、所々に存し、又毛細血管相當にあり、紡錘形細胞の影を微に窺はれ、恰も肉芽組織の瘢痕化せんとする者に類似する所も存すれば、WÖLFLE 氏の説く如き出血が、所々に時をかへてをこり、その後に濾胞の再生を來たせる爲に、かくの如き像を呈せしかとも思はるゝも、こは WÖLFLE 氏の想像にすぎずして、適確なる證なし。

HERTZLER は 1927 年に WÖLFLE 氏の fötales Adenom と同一と見なすべき 2 例を報告せり。その中の 1 例は濾胞大にして膠質を保有せる者、膠質を保有せざる小なる濾胞等存し、其間に核に乏しき纖維走り居り、余の例と甚だ似たる者あり。同氏は此れを fötales Adenom の古くなりて、濾胞の發生を來たせる者なりと説けり。同氏の例にては出血の徴は認められざりき。又其外に同氏の例にて石灰沈著を來たせる者ありしが、之は中心部に來たれる者なりき。

Langerhans は WÖLFLE の説く如き腺腫は屢々みる者にあらず、且胎生期甲状腺は發育中種々の時期を經過する者にして、又 WÖLFLE の例は、その胎兒の如何なる時期に相當するかを明言しえざれば、fötales Adenom といふ名は妥當ならざるを明言すべし。而して Langerhans のあけたる胎生期的細胞型を有する甲状腺腫 2 例の中 1 例は、其の細胞排列の具合は WÖLFLE の例と同じ様なるも、間質結締組織の状態は核少く均質にして、余の例と類似せる者の如くに思はる。且 Langerhans の例に於ても一部分には、尙更に發育せんとする傾向を認めれば、余の例は夫の更に發育のすゝみたる者ぞみるべきか。

ASCHOFF は甲状腺腺腫の發生は、WÖLFLE の説く如き特殊の胎生的要素によるにあらずして、通常の甲状腺を發生すべき所の同氏命名になる中心小管よりなる事を述べたり。

RIBBERT は 9 例の甲状腺を検し、5 例に於て腺腫の胚種をみなすべき周囲組織と結締組織にて、鋭く境ひされたる Epithelkeim を認め、それらは胎生期組織の遺殘せる者にして、これは徐々に發育し、遂に腺腫の形成に至る者にして、WÖLFLE の説く如き不定の胎生的細胞質より發生せる者にはあざる旨を述べたり。併し RIBBERT の例も、腺細胞の排列せしをみるのみにして、未だ濾胞形成を認めず、これと腺腫との移行形を認めざる點 WÖLFLE とその軌を一にす。

是等諸氏より先に、VIRCHOW は甲状腺々腫の發生は、甲状腺濾胞上皮の増殖による者なる事を述べしが、HITZIG, MICHAUD, VOGEL 諸氏等も夫に賛して、胚種より發生すといふ説に反對せり。

今是等諸説の當否はしばらく之を論ぜず、唯本例に就きてみるに、その間質の變性度相當に高度にして、且一部分には石灰化せる所も存すれば、相當以前に變性に陥れる者にして、從つて腺腫の發生は胎生期とは斷じ得ざる迄も、少くも小兒期の甚だ早期に於ける者なるべし。

稿を脱するに當り、御懇篤なる御指導、御校閲を賜りたる長與、緒方兩教授に謹謝し、當教室諸先輩の御援助を深謝す。尙本例は碓居博士の御好意に

Fig. 1.



Fig. 2.

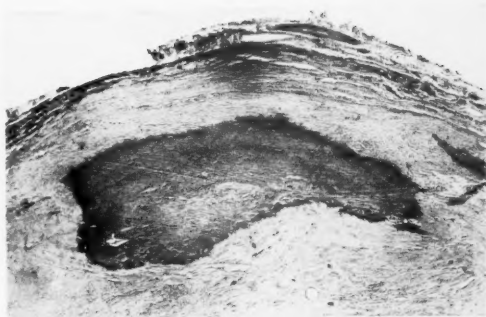
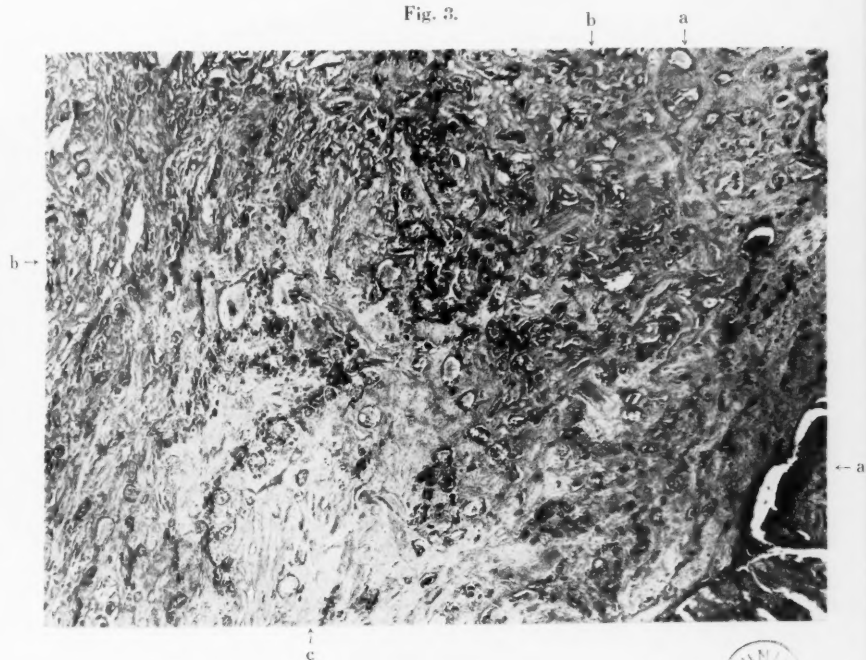
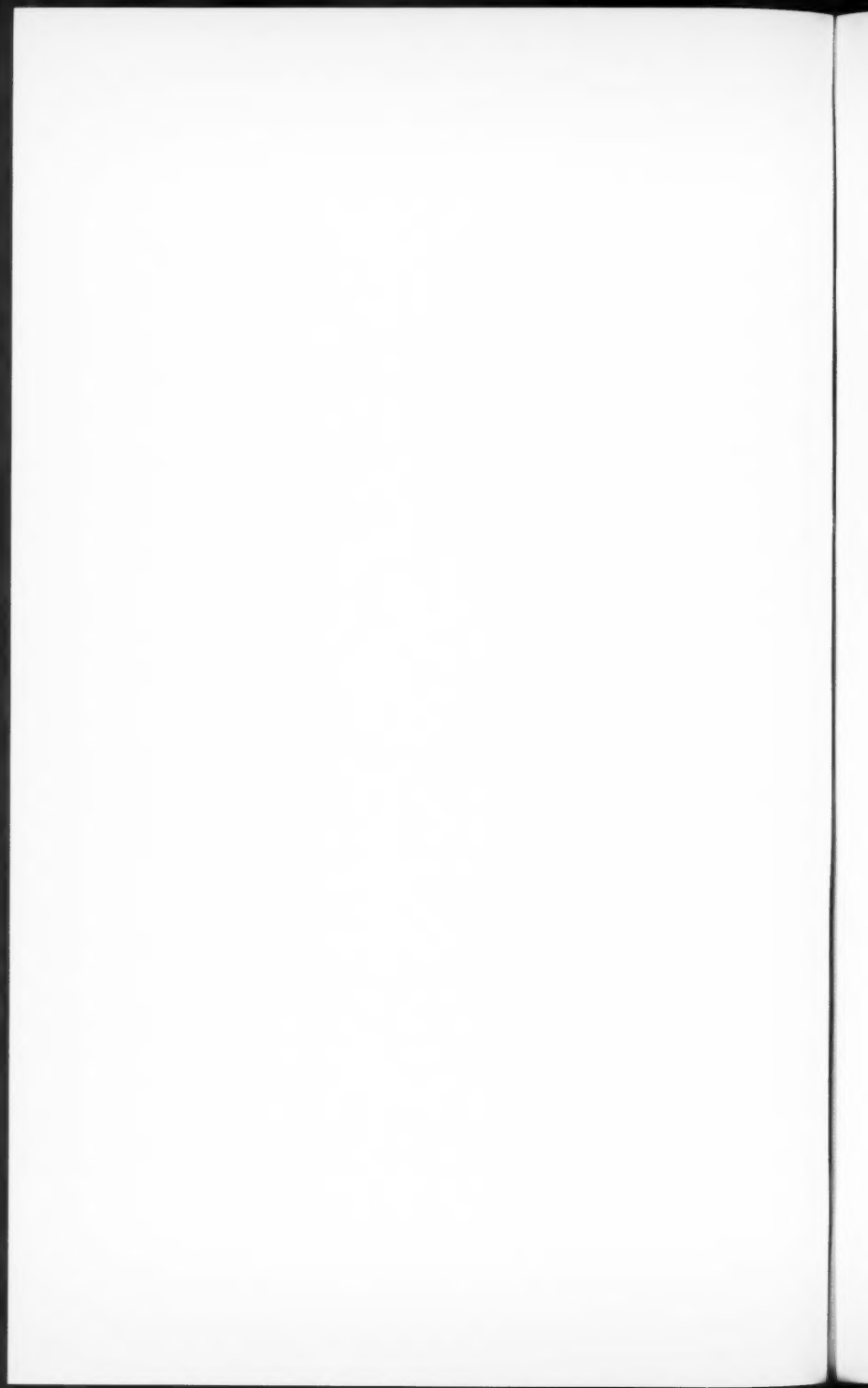


Fig. 3.





よりて、當教室に送られ解剖したるものにして、同博士の御誠意に甚厚なる謝意を表するものなり。

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附 圖 說 明

第一圖 甲狀腺肉眼鏡的寫眞

a) 腫瘍

第二圖 腫瘍膜内に於ける石灰沈着

第三圖 腫瘍組織

a) 膠質を含有せる濾胞

b) 膠質を含有せざる小濾胞

c) 硝子様化したる結締組織

雑 纂

マドリットに於ける鈴木博士よりの通信

謹啓 先生には御元氣の事存じます、今度のマドリッド行については色々御心配下さいました事を感謝致します。御蔭でいろいろよい経験になりました。又めつたに見られぬ所を見る事が出来ました。ベルリンを立つて来る頃北歐洲はもう毎日曇り日でしたが南フランスからスペインに入つてからよい天気になり、マドリッドでは1日雨が降つた丈けでよい天気つづきです。朝夕はさすがに寒い位ですが日中はあたゝかです。但し空気はひきく乾いております、風邪の流行するものもそのせいでせうかと考へました。會議の事に就ては一々新聞記事のやうな事を申上げるのは中止致します。又私も1日中會場につめきりでもありませんので申上げられません、たゞ私に關した事のみに止めます。

ボルスト教授に會ふ折を得て佐々木先生の肝癌の話をし別刷を渡し標本を見せました。勿論ボルストは「ペパトーム」を承認しました。ボルストは長い間「オーア・ド・アヅ・トルオール」を兎の耳に塗つてゐたが癌が出来なかつたそうです。それで私にたづねた第一質問はさう云ふ風にして與へたか云ふ事でした、この仕事を關連してオランダの R. KORTEWEG (Het Nederlandsch Kankerinstitut, Amsterdam) の事を申上げます。この人は化學的物質で肝(マウス)に腫瘍をつくつたが自分のものは未だ癌は自分で云い切らぬと慎重な結論でした、佐々木先生のももつきよく見たいから標本を送つて呉れるやうに云ひました。この事に就ては私から佐々木先生に申上げます。今回の「コミュニケーション」の中にも英國のクック云ふ人の「純粹な化學的物質による癌形成」云ふ題がありました。この演説を私は聞きませんでした、又この人に會つて話しする機會も得ませんでした。こゝで今回の演説に就て申上げます。今回も御承如の如く大がかりなものでした。

毎日「コンフェレンス」に「サイエンスフィクション」及「ソーシャルセク

ション」の演説があり 兩者合せて 25 ばかりでこれは 可なり長いのです、その外に一般演説が 220 餘です。一般演説は第 1 日の午後如何にすべきやに對し議長の案として凡て中止して印刷丈けにする云ふ事に對し討論が出て結局「コンフェレンス」及「サイエンティフィックセクション」及「ソーシャルセクション」の演説の後で申出でによりやる事になりました。こんなわけで誰れがやるのかその時にならないとわかりませんので前記クック氏のは聞きませんでした。やつたのかも知れませんが開期中すつこ會場につめてゐなかつたので分りません。私は Cancer des races の講演の後で先生の御仕事を御送りして頂いた原稿によつてやりました。自分勝手に私の名で先生の御仕事を紹介するのは僭越は存じましたが私に云いよいいためあゝしましたが、提出したのは先生の名で書いてあります。

「種族の癌」の講演はフランス語で少しもわかりませんでした。が歐州全部に亘るものでした。主要講演の印刷物は柏林から御届けします。さて先生の統計に關して私に話し會ひに来た人々は C. BONNE (Cancer Research Institute of Netherland India, Java), この人は先生は御承知かも知れませんが日本の統計に非常に興味をもつて居ります。自分は 3000 の解剖でやはり肝癌(ヘパトーム)の多い事、それが硬變を基としてゐる事(硬變なき例については云いませんでしたが)、胃癌は殆どなき事!!! を申しました。「癌」は自分もよんでゐる事を申してゐました。次には W. CRAMER (Imperial Cancer Research Fund, London) は英國では女は子宮癌より胃癌が多いと云つてゐました(何の統計によるのかは聞きませんでした、急がしくすぐ行つてしまひましたので)。日本では罹患率では子宮癌の方が多し私は申して置きました。前記の R. KORTEWEG (Amsterdam) も統計に關心をもつております、この人はオランダでは食道癌と「アルコール」の關係は實に密接である事を自分は知つたを申しました。又日本は乳癌は少ないと云ふが歐州でもオランダには少ないと云ひました。其他には S. PELLER (Wien), これは若い人ですが統計をやる人で日本と連絡をとりたいと申して居りましたから、先生の所へお伺いをして呉れと申し置きました、特に同封した名刺の人はユーゴース

ラヴィアの代表ですが先生に名刺を上げて日本の癌研究を知りたいと申し呉れこの事でした。ユーゴスラヴィアには日本の官憲がないのでは非私に依頼するからこの事でした。伯林に歸り次第本會議の「プログラム」をお送りしますから日本の癌研究を知らせ、又世界の各研究家と連絡をおこりになるお便宜になれば存じます。本會議に列席して私は新しい事をお報告する事が出来ないのは申譯けない次第ですが、私が出席した事が何か御役に立つたなれば幸存じます。最終日に名國代表の集まりがあつて國際癌研究の組織について話し合ひがありその後で會場で決議案を發表しました。これは全部フランス語で私は啞の如く聞いてゐただけで赤面の至りです。今回も感じた事は語學の要でした、殊に國際的の會はフランス語が大切です思ひました。これが出来ない重要な役が演ぜられません。獨りだけで國を代表するには是非必要だと思ひました。聞いて分るだけになれば外の言葉で自分の云ふ事は云つてもよろしいですが、私は全然分らないので心苦しくなつた次第です。あそこら公使館に參り當地スペイン語の新聞に發表されたものを譯して貰ひましたから大要を次に記します。

1. 癌防疫國際聯合をつくる事。
2. この聯合を各國の癌防疫機關、協會其他の組織に組織する事を希望する。
3. 本會議の議長(今回の議長、León Cardenal, Spania)に對し前記の各國癌防疫機關代表者によつて組織せらるゝ委員を巴里に召集する事を委任す。
4. 前記の委員に對し定款の作製及聯合の創立を委托する事。

なほ會議は3年毎に開催す、次回はローマの豫定なるが決定地はイタリア委員に一任する。◎スラヴ語を會議の國際語として入れる。◎スペイン全國醫科大學學長及 Laccurreye 婦人によつて提供されたる獎學金に關しては之は國際的性質のもので癌防疫に關する仕事に對して與ふ、(精しい事は新聞にしたし)等であります。◎ベルリンからお送りします Suzugen は本會議以前に假りに出来たもので巴里の委員會で決定を見るものと考へます。日本

は遠隔な爲に言葉の關係が甚だ損です。殊に後者は殆ど御考慮あつて適當なる法で日本の癌研究會を世界的なものに致したいと考へる次第です。なほボルスト教授は私が獨逸語でしたので喜びました。

山極先生の話もしました。又ブルーメンタール教授にも會ひました。山極先生は同教授と机を並べて研究して居つた事があること云つて居りました。

○最後は今回はスペイン青木公使のひさ方ならぬ御世話になりました事を申上げて置きます。又チェッコの Dr. LORAND と云ふ人はとても親日家で青木公使の所へ二度私と一所に呼ばれてゆきましたが、この人の紹介で今スペインで有名な Dr. MARAÑON と云ふ人を知りました。これは Instituto de patologica Medico, Dr. MARAÑON Hospital Provinciae Madrid の所長で内分泌専門で本も澤山出してゐるそうです。病院も別館になつてゐる所屬研究室も立派なものですし勉強もしてゐます。この人が日本の内分泌學を交換して呉れるかとの事でした。

御多忙中恐れ入りますがこの事に内分泌の御事を送つてやるやう専門家に御話し合いになる折があつたら御骨折り下さればよろこぶ事でせう。この人はスペインではえらい勢力をもつた人で内閣を組織する事を大統領から依頼されて、うまくゆかなかつたけれど、そのやうな人だそうです。

◎もう一つは前記 Dr. LORAND について申し上げます。この人は日本語を少し話します。マラニオン教授の依頼で癌の話しを前記の病院でスペイン語でやりました。私にも來て呉れと云ふのでゆきましたが、山極と木村、佐伯なきと云ふのだけはききました。あそこで聞く日本人をめちゃにほめたてたこの事です。が本人は決しておせじではなくつてそう信じて日本人をほめちぎります。よいおぢいさんであります。この人はチェッコの人ですが二十三国を話します。而しチェッコのスペイン名譽領事です。昔ミンコースキーの所で仕事をしてゐて、「ビードル」の内分泌の本にも自分の仕事が出てゐるから見て呉れと云つてました。日本に癌の少ないのは日本人が肉類をあまり食べず衛生的で攝生するからだに信じてゐます。この事は他の今度の會に來てゐる人にも聞いた事です。

マドリッドには昔のスペイン畫家のよい繪が澤山あります。

ベラスケスとかゴヤとか他の多くのよい畫家のものがあります。これは私には旅にゐてよい慰めで御座いました。

餘計な事迄書きつらねて失禮申上げました。

遙に先生の御健康を祈つて筆をおきます。

頓首

8年11月1日

在マドリッド

鈴木 達

長 與 又 郎 先生 侍史

THE 25TH SCIENTIFIC MEETING OF THE JAPANESE
SOCIETY OF CANCER RESEARCH,
APRIL 1933, FUKUOKA.

List of papers with summary.

The following 43 scientific papers were presented at the 25th meeting of the Japanese Society of Cancer Research, which was held in Fukuoka, April 1933, in joint session with the 24th general meeting of the Japanese Pathological Society.

1. On new methods for the staining of cancer cells. H. KOMURO (Kyoto).

Double staining with acid fuchsin and methylviolet and also with eosin and methylene blue are recommended. The author also gave his triple staining methods which he claimed to be of value in physiological study of cancer cells. The triple stains included acid fuchsin, orange G, and methylviolet.

2. On glycogen appearing in human tumor tissues. SHINKICHI HORIYE (Tokyo).

Microchemical examination on a large series of human tumors lead the author to conclude that glycogen is present in all the tumors though in varying amounts. The difference in the glycogen contents is not related to whether tumors are epithelial or of connective tissue nature, but the type of the tissue from which the tumor arose has much to do with the glycogen contents of the tumor, in that the physiologically glycogen-rich tissues produced correspondingly glycogen-rich tumors.

3. On the hypophyseal duct tumor. SHOZO YOTSUYANAGI (Sendai).

Detailed descriptions on two cases of the tumor of hypophyseal duct.

4. On the lipoma of corpus callosum. IKUYA HONDA and SEIICHI SHIRAI (Kyoto).

Description of a case.

5. On malignant sympathicoblastoma developed from the sympathetic ganglion of the neck. SEIICHI SHIRAI (Kyoto).

Report of a case, with some considerations on its probable origin.

6. On adamantinomatous tumors. TADASHI MASAKI (Tokyo).

Five cases of tumors clinically diagnosed as adamantinoma were studied. Two of these occurred in upper jaw and they had the typical nature of adamantinoma, but the remaining three, occurring in lower jaw, were found to be epithelioma, in spite of the close superficial resemblance to adamantinoma.

7. On the genetical relations between the so-called carcinoid and the argenophilous cells of the appendix. SHIGERU FUJIMURA (Niigata).

An intimate relation existing between the argenophilous cells and the development of the so-called carcinoid has been pointed out.

8. On the silver reaction of hepatoma. KATSUO TAKEDA and HEIKAKU ITOH (Sapporo).

By means of an improved method of silver impregnation, the authors established that the cells of hepatoma and the liver cells are fundamentally identical, and proved that the previous report stating the hepatoma and liver cells are clearly distinguishable through the silver granulation is based on improper technic.

9. On the primary lung cancers. TETSUO SUZUKI (Tokyo).

Statistical and pathological investigations based on the material at the pathological Institute of the Tokyo Imperial University. Unmistakable increase in the lung cancers has been established for the several recent years. An interesting discussion is given on the probable relation of the primary lung cancer to the healing lesion of pulmonary tuberculosis, and the recent increase in the number of lung cancers explained on the basis of the increases cures in recent years of pulmonary tuberculosis.

10. Malignant tumors and arteriosclerosis. CHOJI TANAKA (Niigata).

Statistical treatment of some 1760 cases available at the Pathological Institute of the Niigata Medical College. The author concludes that in cases with cancers arteriosclerosis appears later than in cases without cancers. In patients of corresponding ages, the grade of arteriosclerosis is higher in those without cancer than in those with cancer. It was also stated that the development of very severe arteriosclerosis is relatively rare among cancer patients.

11. Statistical studies on cancer. MATARO NAGAYO (Tokyo).

Preliminary announcement of an extended study, full details of which are now being prepared for publication in an extra-issue of "Gann". Three sets of statistics have been thoroughly investigated, namely: vital statistics of the Imperial Japanese Government, clinical statistics collected from various University Clinics and large hospitals, and statistics based on autopsy cases at the Tokyo Imperial University Pathology Department. Various aspects of cancer problems have been subjected to analysis.

12. On the changes in chromosomes of tumor cells and the question of tumor formation. MATSUZO ISHIBASHI and HARADA (Chiba).

The number of chromosomes for a series of various tumors was counted and tabulated, showing a very wide range of variation. These findings are discussed in connection with BOVERI's theory of chromosome changes and somatic characters, and the general conclusion is reached that the development of tumor is related to the chromosome disharmony.

13. On the cancerous growth of the remnant of the gall-bladder epithelium in the ligated portion. MOTOHISA MATSUDAIRA and SHICHIRO HOSONO (Niigata).

Cancerous changes are produced by the proliferation of a remnant of epithelium of gall-bladder at the point of ligation. The gall-bladder cancer develops more rapidly, more frequently and more strongly if stone is inserted into the organ and at the same time if an excessive part of its epithelium at the point of

ligation is not removed.

14. Relation between diets and the development of artificial cancer. MANZO OKISHIO (Osaka).

Relation of various kinds of food to the development of tar cancer in rabbits is discussed in the light of some experiments. Synthetic diets are not used in these experiments, which rendered the results difficult of analysis.

15. On the course of changes in the liver in experimental production of hepatoma through O-amidoazotoluol. TOMIZO YOSHIDA (Tokyo).

The present author already demonstrated that hepatoma can be produced in rats by feeding suitable amounts of O-amidoazotoluol for a long period of time. Histological changes in the liver consequent on the feeding of this substance preceding the formation of hepatoma have been traced in this investigation. These changes consisted of hyperplasia of liver cells and their subsequent modification into blastomatic forms. Liver cirrhosis is not associated with the hepatoma formation in these experiments.

16. Fourth report on experimental studies on endothelioma of the dog. KINEO IMAMAKI (Niigata).

Description is given of experiments in which lymphatic endothelioma gave rise to angioma cavernosum in the course of its successive transplantation.

17. Contribution to the study of transplantable chicken sarcoma. AKIRA FUJINAMI and TARO SONODA (Kyoto).

FUJINAMI previously obtained a transplantable duck sarcoma by a chance success in transplanting chicken sarcoma into ducks. This duck sarcoma has been maintained in ducks now for over five years, covering upwards of 167 generations of transplantation. During this time no changes in biological or histological nature of the duck tumor was noted. The various phenomena encountered in transplantation experiments are discussed in connection with the problem of individual peculiarities in susceptibility and resis-

tance to tumor transplantation.

18. Second report of chicken sarcoma studies. MATSUZO ISHIBASHI and SHINOHARA (Chiba).

A series of experiments are described confirming the well known fact of the transmissibility of chicken sarcoma through the inoculation of desiccated material.

19. On adsorption and elution experiments on the filterable agent of chicken sarcoma. WARO NAKAHARA and HISASHI NAKAJIMA (Tokyo).

The filterable agent of Rous sarcoma is poorly adsorbed on kaolin, but a good adsorption takes place on aluminum hydroxide at pH 7-10. The agent adsorbed on aluminum hydroxide is eluted by M/7 solution of sodium di-phosphate and also by N/25 solution of ammonia. Much inactivation of the agent attends these processes of adsorption and elution, and it was not possible to obtain satisfactory purification of the agent for this reason.

20. On the resistance to desiccation of the causative agent of chicken sarcoma. FUKUZO OSHIMA (Nagoya).

An extensive series of experiments are reported repeating and confirming much of the already established facts about the resistance to dryness of the causative agent of chicken sarcoma. Extraordinary degree of the resistance of the agent to desiccation has been re-confirmed anew.

21. Influence of X-rays on the causative agent of chicken sarcoma. SHUNJI FUTAKAMI (Nagoya).

Chicken sarcoma filtrate was put on filter paper and dried. This material was exposed to X-radiation and then its tumor producing action tested. Certain small doses of X-rays seem to stimulate the sarcoma producing agent.

22. Experimental studies on the transmission of the causative agent of chicken sarcoma to eggs and chicks. FUKUZO OSHIMA and YOSHIO YABUNAI (Nagoya).

Even if tumor is not produced in the inoculated organism the

agent does not seem to be killed at once.

23. On the relation between the causative agent of chicken sarcoma and plants and fruits. FUKUZO OSHIMA and KAZUO ADACHI (Nagoya).

Filtrates from OSHIMA strain of chicken sarcoma were injected into the interior portion of various fruits, especially apples, pears, tomatoes, etc. After keeping the fruits at room temperature for varying period of time the substance of the injected fruits were inoculated into chickens to test the survival of the sarcoma agent in the fruits. The longest period of the survival of the agent was 33 days. It is very doubtful that the agent multiplied in the fruit, however.

24. Effects of diets on the growth of transplanted tumors. YOSHIMOTO FUJIMAKI, KUNITARO ARIMOTO, KIICHIRO SAGA, TETSUJI KIMURA and SHICHIRO SATO (Tokyo).

Experiments were conducted using several kinds of incomplete diet unsuitable for the maintenance of normal growth of albino rats. No definite result was obtained, but hope was expressed that some important lead may eventually be uncovered by further investigation.

25. Influence of experimental jaundice on the growth of chicken sarcoma. SHIGEJI MATSUOKA and KAZUO MURASE (Nagoya).

Jaundice was produced in chickens by ligating the common bile-duct and the effect of jaundice tested on chicken sarcoma which is growing in the chicken. A distinct retardation of the growth of sarcoma was noted. This reduced rate of growth of the part of the sarcoma is attributed to the concentration of bilirubin in serum.

26. On the influence of various kinds of amino acids upon the growth of rat carcinoma. KENTARO SUZUKI and SADANOBU MIYAO (Kumamoto).

Albino rats bearing transplanted rat carcinoma were used. Amino acids were injected into these rats in the dose of 0.5 cc of

1 per cent solution per 100 gr. of body weight. Injections were repeated every day for 2 weeks. It was found that glycocoll, alanine and phenylalanine are inert. Glutamic acid and arginine increased the growth of the tumor. On the contrary, histidine, tyrosine, leucine and tryptophane showed an inhibitory action on the tumor growth.

27. Action of aluminium amalgam powder on the growth of sarcoma of the rat. HIDEO MOMOTO (Tokyo).

The subcutaneous injection of aluminium amalgam powder brings about the generation of hydrogen gas at the site of injection. The author tried to see what effect such abnormal production of hydrogen gas would have on the growth of transplanted tumors. In this paper are given the details of experiment showing that the production of hydrogen gas through aluminium amalgam powder injection definitely inhibits the growth of Fujinawa rat sarcoma implanted in a nearby location.

28. On the relation between the pancreatic function and the growth of tumors. KUNIO MIGITA (Kumamoto).

The pancreatic function was interfered with by surgical means on one hand and was increased by grafting additional pancreas on the other hand, and effect of such treatment of the growth of transplanted tumors investigated. The results showed that the pancreatic deficiency increased the rate of tumor growth, while increased pancreatic function reduced the growth the tumors.

29. On the influence of parathyroid glands on the development of malignant tumors. ATSUKATA INUZUKA (Kumamoto).

From the results of his experiments the author concludes that the growth of rabbit carcinoma is inhibited by the injection of parathyroid hormone. A partial extirpation of parathyroids, on the contrary, increases the rate of tumor growth. The effect of the total extirpation of parathyroid was not possible to determine on account of the ensuing tetany.

30. On the influence of various kinds of proteins upon the

metabolism of malignant tumor tissue. SADANOBU MIYAO (Kumamoto).

The old WARBURG method was used in the measurement of tissue respiration. It was found that glyocoll, glutamic acid, phenylalanine, tyramine, histidine, arginine, etc., have no effect on tissue respiration of rabbit sarcoma tissue. Some of these amino acids increase the metabolism of rat liver tissue. It seems that the sarcoma tissue does not split the amino acid tested.

31. Pathological and anatomical changes in rats with transplanted sarcoma, especially a comparison with the changes in starvation. YOSHIO TSUMAKI (Tokyo).

Outline of investigation is given. Various retrogressive changes are encountered in both sarcoma rats and starved rats, but no general conclusion was arrived at in this paper.

32. Studies on the therapy of rat sarcoma. First report. Influence of tartarus stibiatus on the growth of sarcoma. TAKASHI SHIBUYA and SHINRI INABE (Tokyo).

Injections of tartarus stibiatus produce no effect on the growth of rat sarcoma.

33. Experimental chemotherapy of malignant tumor. AKIZO TANAKA (Kyoto).

Some experiments on salvarsan treatment are described, together with a lengthy theoretical consideration.

34. Conditions under which a permanent cure of inoperable cancer of cervix by hard X-ray therapy is possible. With demonstration of patient. MASAHIRO SHIRAKI and SHINTARO SHIMIZU (Fukuoka).

A detailed account of the clinical experience of the authors dealing with the therapeutic action of hard X-rays. Demonstration of the high power X-ray plant and also of patients permanently cured.

35. Implantation of tumor tissue into the spleen. C. Y. CHOI and I. S. YUN (Seoul).

The authors conclude that the implantation of rabbit sarcoma into the spleen of the living rabbit is possible, although the rate of growth of the sarcoma in the spleen is not as great as in the subcutaneous tissue. Hyperplasia of the reticulo-endothelial system and atrophy of splenic parenchyme were found in the spleen into which sarcoma was implanted.

36. A contribution to the tissue culture of human tumors., especially of cervix and portico carcinoma. HARUTAKE UENO (Fukuoka).

Cultivation for a short period of some human tumors in the ordinary chicken and other animal plasma media is reported.

37. The effect of photodynamic activity on malignant tumors. HIROSHI NAKAMURA and MATSUICHI NIWA (Sapporo).

The application of ultra-violet radiated eosin around transplanted tumors inhibits the growth of the tumors more markedly than non-irradiated eosin does. The effect, however, was not of long duration.

38. Spectrographic pathology of malignant tumors. TAKASHI MATSUZAKI (Tokyo).

Spectrographic difference is pointed out between rat sarcoma and rat carcinoma, using alcoholic extracts of the tumors.

39. On the insusceptibility of mice to transplanted cancer tumor. SAICHI MIYAMOTO (Taihoku).

Two strains of mice are referred to, one of which being 100 per cent susceptible and the other 100 per cent non-susceptible to the transplantation of mouse sarcoma. Attempt is made also to trace the hereditary behavior of the tumor susceptibility, without much result.

40. Experimental immunological investigation on the biological peculiarity of transplantable rabbit sarcoma. YUAN-HSUAN FUH (Dairen).

The so-called impedin phenomenon is discussed in connection with a transplantable rabbit sarcoma, which the author regards

as of bacterial origin.

41. On tumor immunity. First report. KOICHI ICHIKAWA and KURAHIKO TAKAHASHI (Sapporo).

The general phenomena of tumor immunity are reiterated. Hope is expressed that blood transfusion of immune animal may yield active immunization.

42. Studies on the immunity to chicken sarcoma, by means of tissue culture method. SEIRIN KAMINO (Nagoya).

43. Biological studies on the blood, especially plasma, of the sarcoma bearing chicken. KAORU IIDA (Kyoto).

雜 報

理 事 會

昭和八年九月二十六日午後五時より丸の内、日本工業俱樂部に於て緒方教授、山川博士の歸朝歡迎會を兼ね、第五回理事會を開催す。

長與會頭、鹽田、稻田兩副會頭、森村、今村兩監事、磐瀬、高木、澁澤、南、宮川、山本各理事、他に緒方、山川、中原、久留各博士、田崎、秦、武藤、松尾、松下氏等出席

○報告事項

- 一、寄附金申込の件
- 二、三井、三菱兩社より建設資金中へ金三萬圓也參ヶ年賦を以て寄附申込の處本年度を以て完納の件
- 三、財團法人癌研究會設立許可申請に關する件
- 四、建築工事工程に關する件

○協議事項

- 一、癌研究所及康樂病院職員手當支給に關する件
- 二、職員辭令交付に關する件
- 三、後援康樂會に關する件
- 四、圖書購入に關する件
- 五、電力供給契約に關する件
- 六、火災保險契約に關する件

以上を以て理事會を終り、宴會の後、緒方教授、山川博士の歐米に於ける癌研究の狀況及癌の治療方面に關し講演ありたり。

昭和八年十二月七日午後五時より丸の内、日本工業俱樂部に於て第六回理事會を開催す、此會は財團法人癌研究會としての第一回理事會なり。

長與會頭、鹽田副會頭、佐々木、磯村、南、磐瀬、宮川、山本、鹽原各理事等出席。

○報告事項

- 一、財團法人癌研究會設立許可の件
- 二、社團法人解散に基づく殘餘財産を財團法人癌研究會へ寄附許可の件
- 三、マドリッド萬國癌研究會に關する件
- 四、米國新に設立せられたる國際癌研究會に加盟するの件
- 五、寄附金に關する件
- 六、癌研究所及康樂病院職員に關する件

○協議事項

- 一、建設工事設計變更に依る増額の件
- 二、諸器械購入に關する件
- 三、備品購入に關する件
- 四、工事完成期日に關する件
- 五、後援康樂會事業に關する件
- 六、道路使用に關する件
- 七、年末賞與支給に關する件
- 八、火災保險に關する件

財團法人癌研究會設立許可

昭和八年五月十一日社團法人癌研究會臨時總會を開催し今後の事業發展を期する爲之を解散し、其の組織を財團法人癌研究會に變更し、且つ其の財産全部を同一目的たる財團に寄附する事を決議せり。依つて長與會頭の名を以て鳩山文部、山本内務兩大臣宛に財團法人設立許可の申請書を昭和八年六月十六日附申請中のまゝ同年十一月十七日附を以て財團法人癌研究會設立の許可ありたり。

設立許可書次の如し。

文 部 省

東專三九六號

財團法人癌研究會設立申請者

長 與 又 郎

昭和八年六月十六日附申請財團法人癌研究會設立の件民法第三十四條に依り許可す。

昭和八年十一月十七日

文部大臣 鳩 山 一 郎 印
 内務大臣 男爵 山 本 達 雄 印

財団法人癌研究會設立の登記

昭和八年十一月十七日附を以て財団法人癌研究會の設立許可ありたるに依り同年十二月一日東京區裁判所板橋出張所に於て、民法の規定に依り下記事項を登記す。

○財団法人癌研究會設立ノ登記事項

登記番號四八號

登記の年月日 昭和八年十二月一日

名 稱 財団法人癌研究會

事 務 所 東京市豊島區西巢鴨二丁目二千六百十五番地

目 的 癌其の他の腫瘍に關する研究及研究の獎勵並に其豫防治療を爲すを以て目的とす。

設立許可の年月日 昭和八年拾壹月拾七日

資産の總額 金貳拾九萬貳千九百拾參圓八拾五錢

出資の方法 寄附及其の他の收入

理 事

東京市麻布區市兵衛町二丁目八十八番地

東京市本郷區弓町一丁目十番地

東京市神田區駿河臺二丁目九番地九

東京市麴町區一番町三十八番地

東京市神田區駿河臺一丁目一番地

東京市麻布區東島居坂町十三番地

東京市本郷區駒込上富士前町七十八番地

東京市芝區高輪南町三十番地

東京市赤坂區檜町一番地

東京市芝區三田綱町十番地

東京市本郷區湯島新花町九十五番地

長 與 又 郎

鹽 田 廣 重

稻 田 龍 吉

木 村 德 衛

佐 々 木 隆 興

高 木 喜 寛

宮 川 米 次

磯 村 豊 太 郎

南 大 曹

澁 澤 敬 三

磐 瀬 雄 一

解散法人財産處分許可

社團法人癌研究會は癌に關する研究及び研究の奨勵をなす目的を以て大正三年一月三十一日文部大臣の許可を得、設立したるものなるが事業の發展を期する爲、昭和八年五月十一日臨時總會の決議を以て解散せり。然るに其の財産に就ては定款に歸屬權利者を定めず、又是を指定する方法を定めざりしを以て、理事者に於て細査の上財團法人癌研究會が從來實行し來れる目的に類似する目的を以て設立許可申請中の東京市豊島區西巢鴨二丁目二千六百十五番地財團法人癌研究會の基本財産をして設立者たる長與又郎氏に贈與方許可の件を昭和八年七月二十日附を以て清算人宮川理事より鳩山文部大臣に申請中の處、同年十一月十七日附を以て許可せられたり。

其の許可書下記如し。

文 部 省

東專四九九五

社團法人癌研究會清算人

宮 川 米 次

昭和八年七月二十日附申請、其の法人解散に基づく殘餘財産を財團法人癌研究會に寄附するの件許可す。

昭和八年十一月十七日

文部大臣 鳩 山 一 郎 印

癌研究所及康樂病院建築工事報告

一. 工事第三回設計變更

現新築工事の中内軸部内外裝配管、配線、諸裝置、門並びに外圍牆壁等下記の通り設計變更す。

- 1) 表門脇鐵筋「コンクリート」造牆壁及其附近設計變更
- 2) 本館右翼屍室脇地下室一部設計變更
- 3) 所長室、院長室天井裏空氣拔設計變更
- 4) 渡廊下屋根設計變更
- 5) 所長室、院長室壁面設計變更
- 6) 五階屋根扶壁際物見臺新設に關する設計變更
- 7) 本館「ダストシュート」出入口新設に關する設計變更
- 8) 本館二階廊下及正面階段三階天井設計變更
- 9) 三階浴室一部設計變更

- 10) 塔屋根一部設計變更
- 11) 婦人科診察室一部設計變更
- 12) 本館一階藥局設計變更
- 13) 本館二階病室及四階看護婦寢室一部設計變更
- 14) 組織培養室硝子間仕切設計變更
- 15) 所長室、院長室天井換氣孔設計變更
- 16) 天井格椽鈎用「ボールド」及甲板締用「ボールド」設計變更
- 17) 煙突鐵梯子設計變更
- 18) 建具の大きに關する設計變更
- 19) 晝棧及破損止の用水設計變更
- 20) 炊事室「カウンター」其他設計變更
- 21) 別館一階間仕切一部設計變更
- 22) 別館露臺上硝子屋根新設
- 23) B病室木造間仕切一部設計變更
- 24) 別館内部出入口枠及建具鉛板張に關する設計變更
- 25) 第二回設計變更に伴ふ第一工事鐵筋「コンクリート」造々附流し設計變更
- 26) 第二工事の内暖房工事一部設計變更
- 27) " " 高壓蒸氣工事一部設計變更
- 28) " " 揚水竝に給水工事一部設計變更
- 29) " " 給湯工事一部設計變更
- 30) " " 排水工事一部設計變更
- 31) " " 衛生工事一部設計變更
- 32) " " 瓦斯工事一部設計變更
- 33) 第三工事の内電燈、電力及電話電鈴竝に受電裝置其他工事一部設計變更
- 34) 第四工事の内特許萬代堀若くは同等品に關する設計變更
- 35) 第四工事の内縁石一部設計變更
- 36) 竣工期限に關する設計變更

以上は元の請員金貳拾萬參千七百八拾五圓六拾五錢也の處、第三回設計變更に依り、金五千六百七拾五圓八拾四錢也を増額の上竣工期限を昭和八年十二月二十日迄に延期し、施工する事とせり。

二. 電力需給契約

昭和八年十二月二十日、本會と王子電氣軌道株式會社との間に下記の電力需給契約をなす。

電力需給契約書

財團法人癌研究會（以下單に甲と稱す）と王子電氣軌道株式會社（以下單に乙と稱す）との間に電力需給に關し左記條項を契約す。

第一條 甲が乙より電力の供給を受ける場所は東京市豊島區西巢鴨二丁目二千六百十五番地所在甲の變電室とす

第二條 甲は其使用電力を乙より供給を受け自家用電氣工作施設規則に據り使用するものとす

第三條 送電上の設備及管理補修負擔の責任分界點は甲の變電室引込口近くに甲が設備したる區分開閉器の電源側端子とす

第四條 甲が乙より供給を受ける電力は最大參拾「キロワット」とし各相間の負荷を平衡ならしむるものとす

第五條 電氣方式、周波數及電壓は左記の通りとす

電氣方式 交流三相三線式

周波數 毎秒五拾「サイクル」

電壓 三千「ボルト」乃至三千三百「ボルト」

力率 八拾五「パーセント」以上

第六條 乙が甲に供給する電力は晝夜間送電とす

但し毎月第一日曜日及第三日曜日に限り晝間送電を中止する事を得るものとす

第七條 使用電力量は甲の變電室内配電盤上に甲の設備したる不平衡負荷積算電力計により毎月末日雙方立會の上檢量するものとす

第八條 電力料金は左記に依り算出したるものを甲は乙の請求に依り支拂ふものとす

壹ヶ月使用電力量 壹「キロワット」時に付

參千「キロワット」時迄 六錢八厘

參千「キロワット」時超過分 五錢八厘

前項に依り算出したる壹ヶ月間の電氣料金が金壹百八拾圓也に滿たざる場合若しくは全く電氣の使用をなさざる場合と雖も責任最底料金として金壹百八拾圓也を甲は乙に支拂ふものとす

但し高壓供給に付前記の五分を割引くものとす

第九條 本契約期間内に甲が電力の使用を中止又は廢止したる場合も雖も責任最低料金をして其の月内未経過日數に對し前條に準し算出したる金額を甲は乙に支拂ふものとする

第十條 左の場合に於て乙は送電せざる事あるも爲に生したる甲の損害に對し賠償の責に任せざるものとする

一、天災地變其他不可抗力に因る時

一、法令又は官廳の處分に因る時

第十一條 本契約有効期間は昭和九年 月 日より向ふ壹ヶ年間とする有効期間満了三ヶ月前雙方何等提議なき時は更に向ふ壹ヶ年間其の效力を繼續するものとする

第十二條 本契約は當事者的一方と相手方の繼承人間又は當事者の繼承人相互間に於て其效力を有す

第十三條 甲は契約期間中乙以外より電力の供給を受けざるものとする

第十四條 本契約に記載なき事項は總て乙の供給規定に據るものとする

第十五條 本契約期間中も雖も甲乙協議の上最大電力を増減する事を得るものとする

右契約締結の證として本證書貳通を作成し各自其の壹通を保有するもの也
昭和八年拾貳月貳拾日

東京市豐島區西巢鴨二丁目二千六百十五番地

財團法人癌研究會

會頭 長 與 又 郎 印

東京市豐島區西巢鴨三丁目九百六十五番地

王子電氣軌道株式會社

取締役社長 金 光 庸 夫 印

國際癌研究財團 (The International Cancer Research Foundation.) 創立さる

1932 年 6 月米國フィラデルフィヤ市に於て William H. Donner を會頭とする國際癌研究財團組織され、今回日本癌研究會會頭長與教授の許にも同財團評議員たらん事を招請し來り、長與會頭は同招請に對し既に快應さるゝ旨の回答を發せられたる由、同財團の目的は理事会評議員會に於て同意を得たる癌研究の凡ゆる方面に對し(建築物設立を除く)經濟的援助をなすに在り

て、基本金二百萬弗を有し年々約十萬弗を同目的のため支出す。其の最も特徴を思はる所は同財團の活動範圍を廣く世界に求めんとするにありて、評議員は之を廣く世界の各地より選出し、支出金の普遍化を期せんが爲に次の内規を設けたり。即ち向ふ十年間、米國一州に於ける援助金額は同財團年收の35%を越ゆるべからず、米國內全體としては65%を越ゆるを得ず、他國に對しては35%より少からず50%を越えざる補助をなすべし。

因に同財團の主要役員の顔振れは次の如し。

William H. Donner, **President**
 Arthur V. Morton, **Vice-President**
 Mildred W. S. Schram, Ph. D., **Secretary**
 Fidelity-Philadelphia Trust Co., **Treasurer**

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寄 附 金

一、癌研究費指定寄附金申込 (昭和八年度第四回報告)

十月二十三日付

| | | |
|-------|-------|--------------------------|
| 金貳百圓也 | (一時納) | 佐 竹 清氏 大阪市西區堀江上通四ノ七 |
| 金貳百圓也 | (同上) | 高 村 庄 太 郎氏 大阪市東區北濱四丁目 |
| 金貳百圓也 | (同上) | 今 村 荒 男氏 西宮市南郷町五七 |
| 金貳百圓也 | (同上) | 木 積 一 次氏 大阪府中河内郡大戸村 |
| 金壹百圓也 | (同上) | 西 業 求氏 大阪市西區南堀江通四ノ二五 |

金壹百圓也 (一時納)

高橋三千彦氏

大阪市天王寺區堀越町七四

金壹百圓也 (同上)

鶴岡庄七氏

東京市本郷區西片町十

十月二十四日附

金壹萬五千圓也 (金參千圓也ゾ、
五ヶ年賦)

社長 男爵 住友 吉佐衛門氏

大阪市東區北濱五ノ二

二、癌研究所及康樂病院建設指定寄附金申込

(昭和八年度第四回報告)

九月二十二日附

金壹千圓也 (金貳百圓也ゾ、
五ヶ年賦)

門馬直記氏

東京市豐島區駒込町六ノ八二一

十月二日附

金壹千圓也

鹽野義三郎氏

大阪市東區道修町三ノ一二

金參拾圓也

無名氏

〇癌研究費指定寄附金受領

(昭和八年度第四回報告)

金壹千參百圓也 (金六千五百圓也
五ヶ年賦第一回分)

第一生命保險相互會社

金壹千圓也 (一時納)

鹽野義三郎氏

住友合資會社

金參千圓也 (金壹萬五千圓也
五ヶ年賦第一回分)

社長 男爵 住友 吉佐衛門氏

金壹百圓也 (一時納)

鶴岡庄七氏

二、癌研究所及康樂病院建設指定寄附金受領

(同上)

金貳百圓也 (金壹千圓也
五ヶ年賦第四回分)

川添正道氏

金貳百圓也 (金壹千圓也
五ヶ年賦第一回分)

門馬直記氏

金四千七百五十圓也 (診斷用X線裝置購入指定)

(金九千五百圓也
貳回分納第二回分) 財團法人 阪上慈善財團

金貳百圓也

(金壹千圓也
五ヶ年賦第三回分)

中野金次郎氏

金四百圓也

(金貳千圓也
五ヶ年賦第參回分)

西村熊太郎氏

金參拾圓也

無名氏

人 事

十一月二十八日附辭令

財團法人癌研究會癌研究所研究部病理部主任

中原和郎

同上 癌研究部部員を囑託す

岸三二

同上 同上

武藤幸次

財團法人癌研究會附屬康樂病院放射線科科長を囑託す

山川保城

同上 内科醫長を囑託す

田崎勇三

同上 外科醫長を囑託す

久留勝

同上 産婦人科醫長を囑託す

秦清三郎

同上 事務長を囑託す

市川俊次

同上 藥局長を囑託す

松下正男

同上 放射線科々員を囑託す

松尾象一

財團癌研究會 後援 康樂會趣意書

難病中の難病である癌は、本邦死亡原因の主要なる地位を占め、年々四萬數千人の生命を奪ふのであります。然かも猶ほ年を逐ふて増加の傾向を見るのは甚だ悲しむべき事實であるのみならず、其殆んぞ全部が四十代から五十代といふ様な人生の最も圓熟せる時代で、一家にまづは首長であり、社會に在りては其中堅として最も活動し得る人々であるから、國家にまづは非常に大なる損失であります。然しながら此恐るべき癌、古來から不治と思はれて居た癌も、最近醫學の進運に伴つて、或場合には完全に根治させる事も出來、また或程度までは其豫防を講ずる事も出來まして、吾人は將來癌征服の必ずしも不可能事でないといふ信念を抱くに至りつゝあるのであります。

歐米に於ては夙に癌問題を重要視し、各國相競ふて其研究に没頭し、癌の豫防撲滅事業には國民の多數が十分の理解と多大の同情を持ち國費、公費

就中一般篤志家の寄附行爲に依つて完備せる研究所及び病院が相次で設立せられつゝあるのであります。

我國に於ける財團法人癌研究會は、明治四十一年即ち今より二十六年前に創立せられ、爾來専ら有志家の贈金により、全國有爲の癌研究者に對して、研究費の補助、優秀論文への授賞、機關雜誌「癌」の發行等、本邦唯一の癌研究機關として斯學の爲め聊か貢獻し來つたのであります、而して其間數多の世界的業績が本邦學者の手に依つて完成せらるゝに至つたのは、有志諸氏の後援に負ふ所極めて多いのであつて深く感謝して居る次第であります。

然しながら現代世界醫學の趨勢に鑑み、我々は一日も早く完備せる研究所及び其附屬病院の設立を企圖し、廣く世の需めに應じて、早期診斷は勿論、適當の治療を施し、研究に相俟て不斷の努力を續け、歐米のそれに比して、一步なりとも前進したいと云ふ希望を抱いて居つたのであります、癌研究會の今日迄の不如意の經濟狀態では、到底其希望を達することを得なかつたのであります、然るに昭和四年になりまして癌研究會の事業成績及び其の計畫が畏れ多くも天聽に達し特別の御下賜金を拜受するの光榮に浴しましたのを機會とし癌研究會は、此有難き思召に對しましても、一日も早く事業の達成を圖らなければならぬと云ふ強い信念を以て銳意其事に従ひ、篤志家の寄附金も相當額に達しましたので、昨年約二千坪の敷地を西巢鴨に購ひ、研究所及其附屬病院(康樂病院と命名)を建設するの機運に到達し、愈々明春二月を以て竣成を見るの運に達して居るこのこであります。

斯くして相當な建築が出来たとしても、次で來るべき研究部及治療部の完全なる設備は勿論、此事業に従事する人々の研究に對して遺漏なき様にする爲には更に多くの經費を要する次第であります、然るに現在に於ける癌研究會の資金のみでは所期の目的を達成する事が困難であることは想像に難くない所であります、當事者の苦心焦慮は寔に同情に堪えませぬ。

茲に於て我等同志相圖り弘く世の篤志家の御同情に訴へて後援會を設立して其全力を舉げて癌研究會の熱心なる事業を援助したいと思ふのであります、何卒此趣旨に御賛同の上是非本會に御加盟下され癌研究會をして安じて難病中の難病である癌の豫防撲滅について所期の成績を挙げしめ、人類福祉の増進に貢獻し得るやう御後援下さらば誠に幸甚の至りであります。

東京市豊島區西巢鴨二丁目二千六百十五番地

財團法人 癌研究會 後援 康樂會

財団法人 癌研究會事業要綱

- 一、 癌其他の悪性腫瘍に關する研究及研究の補助獎勵。
- 二、 癌其他の悪性腫瘍の豫防及治療法の攻究。
- 三、 癌に關する知識の普及。
- 四、 學術集談會の開催及優秀論文への授賞。
- 五、 癌に關する雜誌及び圖書の發行。
- 六、 講習會、講演會其他必要な事項。

財団法人 癌研究會 後援 康樂會規則

- 第一條 本會ヲ「財団法人癌研究會」後援康樂會ト稱ス
- 第二條 本會ハ財団法人癌研究會ノ趣旨ヲ翼賛シ之ヲ後援スルヲ目的トス
本會ノ收入ヨリ經費ヲ控除シタル殘額ハ全部財団法人癌研究會ニ寄附ス
- 第三條 本會ノ會計年度ハ毎年四月一日ニ始マリ翌年三月三十一日ニ終リ其收支計算ハ雜誌「癌」ニ報告ス
- 第四條 本會ノ事務所ハ東京市豐島區西巢鴨二丁目二千六百十五番地財団法人癌研究會内ニ置ク
- 第五條 本會ニ左ノ役員ヲ置ク
- | | | | |
|-----|-----|-----|-----|
| 會 長 | 一 名 | 副會長 | 三 名 |
| 相談役 | 若干名 | 幹 事 | 若干名 |
- 第六條 會長、副會長ハ總會ニ於テ之ヲ選舉ス
- 第七條 相談役及幹事ハ會長之ヲ囑託ス
- 第八條 役員ノ任期ハ各三年トス、但シ再任ヲ妨ケス
- 第九條 幹事中ヨリ會計主任ヲ定メ本會ノ收支會計ノ事務ヲ掌ル
- 第十條 幹事會ハ必要ニ應ジ會長之ヲ招集ス
幹事會ノ議事ハ出席者ノ過半数ヲ以テ之ヲ決ス
- 第十一條 本會ノ會員ヲ名譽會員、贊助會員及通常會員ノ三種トス
本會會員ニハ會員證ヲ交付ス
- 第十二條 名譽會員ハ癌腫ニ關スル學術上顯著ナル功績アル者、財団法人癌研究會又ハ本會事業ニ多大ノ貢獻アル者、若クハ金壹千圓以上ヲ寄附シタル者ニシテ會長之レヲ推薦ス
贊助會員ハ一時金壹百圓以上又ハ年額一日(金拾圓)以上ヲ納ムル者通常會員ハ年額金五圓ノ會費ヲ納ムルモノトス
- 第十三條 贊助會員又ハ通常會員タラントスル者ハ本會事務所ニ申込ムヘシ、退會

セントスルトキ亦同シ

第十四條 本會會員ハ財團法人癌研究會及ヒ本會ヨリ發行スル雜誌其他ノ出版物ノ配布ヲ受クル外、會員證ニ記載セル特典ヲ有スルモノトス

第十五條 本會ハ必要ニヨリ支部ヲ設クルコトアルヘシ

支部ニ關スル規則ハ別ニ之ヲ定ム

第十六條 本會ノ目的ヲ達成スル爲メ隨時必要ナル事業ヲ行フコトアルヘシ

附 則

現ニ社團法人癌研究會ノ會員ハ特ニ入會ノ手續ヲ要セスシテ本會ノ會員トス

東京市豐島區西巢鴨二丁目二千六百十五番地

事務所 財團法人癌研究會 後援 康 樂 會

電 話 大塚四〇三二番

振替番號 東京一三九三一番

役 員 (イロハ順)

| | | | |
|-----|-----------|-----------|-----------|
| 會 長 | 南 大 曹 | | |
| 副會長 | 緒方知三郎 | 河 本 禎 助 | 瀬 川 昌 世 |
| 幹 事 | 稻 田 三 子 | 磐 瀬 眞 子 | 今 村 三 子 |
| | 片 山 國 幸 | 川 島 震 一 | 高 木 志 滿 子 |
| | 田 宮 猛 雄 | 都 築 正 男 | 長 與 玉 子 |
| | 山 本 ス ズ 子 | 山 崎 佐 | 松 山 陸 郎 |
| | 前 田 友 助 | 郷 隆 | 小 峯 茂 之 |
| | 小 島 三 郎 | 青 山 芳 子 | 東 龍 太 郎 |
| | 佐々木 りき子 | 佐 久 間 兼 信 | 南 滿 子 |
| | 宮 川 泰 子 | 鹽 田 紀 久 代 | 澁 澤 登 喜 子 |
| 相談役 | 今 村 繁 三 | 山 本 留 次 | 鹽 原 又 策 |

財團法人癌研究會 康樂會へ御加盟の奨め

○専門の癌研究所及治療所(康樂病院)が出来ました。

私共多年の宿願であつた、専門の癌研究所及治療所が、東京市豐島區西巢鴨二丁目(舊稱宮仲)に出来ました、之れは我國最初の癌の綜合的研究及治療の機關であります。

○癌は必ずしも不治の病ではありません。

癌を全治させるには時期があります、要するに手遅れにならぬ内に治療を受けることが絶対必要な譯であります、此の意味に於て癌の早期診断が極めて大切であります。

○癌の豫防。

癌の豫防は、傳染病の豫防とは全く異つた方法に依らなければなりません、そして醫者や衛生官吏が如何に努力しても其れだけでは効果がありません、何うしても各人が癌に對する常識、殊に豫防に關する相當の知識を持つことが必要であります。

癌の豫防に就ては、癌研究會發行の『癌にかゝらぬ注意』を御覽下されば御参考になると思ひます。

○癌研究會の活動資金。

癌研究會が其の要綱に掲げた重大な使命を達するためには莫大の費用が必要であります、其の資金としては、御下賜金の外、從來主として有志の寄附金を以て之に充てゝ來ましたが、更に其活動資金の充實を計るために、別に後援會を組織して癌研究會の事業を援助しやうと思ふのであります。就ては世の識者諸賢が私共の微意のある所を御理解下さいまして奮つて本會に御参加の上御協力あらん事を切に希望する次第であります。

○會 員。

年額金五圓の會費を納むる方を通常會員とし、一時金壹百圓以上又は年額一口(金拾圓)以上を納むる方を贊助會員とすることになつてゐます。又癌腫に關する學術上顯績なる功績あり若くは本會事業に多大なる貢獻をなし、或は金壹千圓以上を寄附せる方に對しては特に名譽會員に推薦致すことになつて居ります。

○會員の特典。

本會の會員は癌研究會及び本會より發刊する出版物を配布を受け、又は講演會に出席し得るのであります。尙會員及び其家族の方々に對しては康樂病院で特に御便宜を圖り、健康相談の御需に應ずる事になつて居ります。

癌研究會後援康樂會入會者氏名 (申込順)

(自 昭和八年十一月二十四日)
(至 同 年十二月二十七日)

一. 贊助會員 (一口金拾圓也或は一時金壹百圓以上)

| 住 所 | 氏 名 | 口 數 | 紹介者 |
|-----------------|------------|---------|---------|
| 東京市赤坂區檜町一 | 南 滿 子氏 | (二口) | (本 人) |
| 東京市赤坂區檜町一 | 南 綾 子氏 | (一口) | (南會長夫人) |
| 東京市麴町區中六番町三 | 桑 野 佐 源 太氏 | (一口) | (南 會 長) |
| 東京市赤坂區檜町四 | 城 美 和氏 | (一口) | (南會長夫人) |
| 東京市小石川區白山御殿町一二七 | 尾 上 登 良 子氏 | (一口) | (同 上) |
| 東京市麻布區飯倉町六ノ一三 | 市 村 龜 藏氏 | (一口) | (同 上) |
| 東京市麻布區飯倉町六ノ一三 | 杵 屋 勝 三 郎氏 | (一口) | (同 上) |
| 東京市麻布區市兵衛町二ノ八八 | 長 與 玉 子氏 | (二口) | (長與會頭) |
| 東京市麻布區市兵衛町二ノ八八 | 長 與 又 郎氏 | (三口) | (本 人) |
| 埼玉縣浦和町二、九五二 | 市 川 俊 次氏 | (一口) | (本 人) |
| 東京市小石川區龍蔵町一九六 | 宮 川 敬 三氏 | (一口) | (山本理事) |
| 東京市中野區上町一 | 生 野 團 六氏 | (一口) | (南 會 長) |
| 横濱市本牧町八王子海岸 | 太 田 亥 十 二氏 | (一口) | (同 上) |
| 東京市赤坂區檜町一 | 南 大 曹氏 | (三口) | (本 人) |
| 東京市小石川區白山御殿町一〇七 | 荻 生 天 泉氏 | (一口) | (南會長夫人) |
| 東京市麴町區內幸町一ノ三 | 藤 浪 和 子氏 | (一口) | (同 上) |
| 東京市麻布區仲ノ町一一 | 岩 本 治 久氏 | (一口) | (矢野甚吉氏) |
| 東京市下谷區下根岸九四 | 峰 川 朝 之 亟氏 | (一口) | (南 會 長) |
| 東京市芝區三田功運町一 | 白 石 元 治 郎氏 | (金壹百圓也) | (本 人) |
| 東京市麻布區櫻田町三八 | 足 立 正 氏 | (金貳百圓也) | (前田幹事) |
| 東京市牛込區砂土原町三ノ八 | 上 山 郷氏 | (金壹百圓也) | (長與會頭) |
| 東京市淀橋區下落合三ノ一二八四 | 渡 邊 ヨ シ 子氏 | (一口) | (本 人) |
| 東京市麻布區材木町三六 | 内 藤 佐 賀氏 | (一口) | (本 人) |
| 東京市牛込區甲良町四〇 | 大 藪 兼 藏氏 | (一口) | (山本理事) |
| 東京市豐島區西巢鴨三ノ九六五 | 王子電氣軌道株式會社 | | (本 人) |
| 東京市芝區車町三五 | 川 崎 榮 助氏 | (二口) | (南 會 長) |
| 東京市芝區車町三五 | 川 崎 孝 氏 | (一口) | (同 上) |
| 東京市神田區駿河臺三ノ六ノ五 | 高 橋 ミ ミ 子氏 | (二口) | (同 上) |
| 東京市本郷區西片町一〇 | 小 田 平 義氏 | (一口) | (山崎幹事) |
| 東京市本郷區西片町一〇 | 鹽 谷 卓 爾氏 | (一口) | (同 上) |
| 東京市神田區神保町二ノ三六 | 長 濱 繁 氏 | (一口) | (同 上) |
| 東京市牛込區北山伏町一六 | 横 森 賢 治 郎氏 | (一口) | (同 上) |
| 東京市神田區末廣町一〇 | 鈴 木 平 十 郎氏 | (一口) | (同 上) |
| 東京市本郷區曙町一九 | 山 崎 佐 氏 | (二口) | (本 人) |
| 東京市日本橋區村松町二五 | 竹 内 薫 兵氏 | (一口) | (山崎幹事) |
| 東京市本郷區元富士町二 | 今 井 甚 太 郎氏 | (一口) | (同 上) |
| 東京市神田區駿河臺二ノ九 | 稻 田 龍 吉氏 | (三口) | (本 人) |

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|---------------------|----|--------|-------------|-----------|
| 東京市神田區駿河臺二ノ九 | 山脇 | 稻田さし子氏 | (二口) | (本 人) |
| 東京市小石川區原町一二六 | | 鈴木玉枝氏 | (一口) | (警 署 理 事) |
| 東京市小石川區水道町五九 正吉方 | | 山脇須磨氏 | (金壹百 圓也) | (長 與 會 頭) |
| 東京市小石川區久堅町七四 | | 大橋光吉氏 | (一口) | (本 人) |
| 東京市麻布區一本松町二二 | | 大倉繁子氏 | (金壹百 圓也) | (本 人) |
| 東京市赤坂區青山南町一ノ一九 | | 田中實氏 | (金壹百 圓也) | (長 與 會 頭) |
| 東京市小石川區林町九二 | | 徳川宗敬氏 | (一口) | (警 署 理 事) |
| 東京市日本橋區濱町一ノ三 | | 渡邊鉄三郎氏 | (一口) | (南會長夫人) |
| 東京市本郷區曙町一九 | | 山崎佐氏 | (金壹百 圓也) | (本 人) |
| 東京市京橋區木挽町 南胃腸病院 | | 鈴木盛海氏 | (一口) | (南 會 長) |
| 東京市本郷區弓町一ノ一〇 | | 鹽田廣重氏 | (三口) | (本 人) |
| 同 | | 鹽田紀久代氏 | (二口) | (本 人) |

二. 通常會員 (會費金五圓也)

| 住 所 | 氏 名 | 紹介者 |
|-------------------|-------|--------|
| 東京市四谷區三光町一 | 竹内茂代 | (田宮教授) |
| 東京市牛込區市ヶ谷河田町九 | 吉岡みち子 | (同 上) |
| 横濱市中區若葉町三ノ五五 横濱病院 | 幾石敏夫 | (本 人) |
| 東京市神田區小川町三ノ二八 | 辻高俊 | |

癌研究會後援康樂會會費受納者芳名 (領收順)

(自 昭和八年十二月六日)
(至 同 九年一月十二日)

一. 贊助會員

| | | |
|-------|-------|--------|
| 金拾圓也 | (一 口) | 桑野佐源太氏 |
| 同 上 | (同) | 太田亥十二氏 |
| 同 上 | (同) | 生野團六氏 |
| 同 上 | (同) | 荻生天泉氏 |
| 同 上 | (同) | 藤浪和子氏 |
| 同 上 | (同) | 南綾子氏 |
| 金參拾圓也 | (三 口) | 南大曹氏 |
| 金貳拾圓也 | (二 口) | 南満子氏 |
| 金拾圓也 | (一 口) | 峰川朝之丞氏 |
| 金壹百圓也 | (一時納) | 白石元治郎氏 |
| 金壹百圓也 | (同) | 上山郷氏 |

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|-------------|-------|-------------|
| 金拾圓也 | (一 口) | 內 藤 佐 賀氏 |
| 金拾圓也 | (一 口) | 渡 邊 ヨ シ 子氏 |
| 金參拾圓也 | (三 口) | 王子電氣軌道株式會社氏 |
| 金拾圓也 | (一 口) | 大 藪 兼 藏氏 |
| 金貳百圓也 | (一時納) | 足 立 正氏 |
| 金拾圓也 | (一 口) | 城 美 和氏 |
| 同 上 | (同) | 鈴 木 盛 海氏 |
| 同 上 | (同) | 大 橋 光 吉氏 |
| 金壹百圓也 | (一時納) | 大 倉 繁 子氏 |
| 同 上 | (同) | 田 中 實氏 |
| 金拾圓也 | (一 口) | 德 川 宗 敬氏 |
| 同 上 | (同) | 鈴 木 玉 枝氏 |
| 同 上 | (同) | 渡 邊 錢 三 郎氏 |
| 金壹百五拾圓也 | (一時納) | 山 崎 佐氏 |
| 金壹百圓也 | (同) | 山 脇 須 磨氏 |
| 金拾圓也 | (一 口) | 市 村 龜 藏氏 |
| 同 上 | (同) | 杵 屋 勝 三 郎氏 |
| 小計 壹千壹百參拾圓也 | | |

二. 通常會員

| | |
|-------------|----------|
| 1. 金五圓也 | 幾 石 敏 夫氏 |
| 2. 同 上 | 辻 高 俊氏 |
| 小計 金拾圓也 | |
| 合計 壹千壹百貳拾圓也 | |

(一) 癌研究費指定寄附金申込者芳名

(自明治四十一年至昭和八年十二月)

| 年 月 | 金 額 | 姓 名 | 摘 要 |
|----------|----------|-------------|------------------|
| 明治四十一年四月 | 200.00 | 福 間 甲 松殿 | 一 時 納 |
| 同 四月 | 500.00 | 山 中 清兵衛殿 | 四月より月割 金五圓宛 |
| 明治四十二年九月 | 100.00 | 緒 方 銈次郎殿 | 「癌」發行費と して |
| 明治四十三年七月 | 500.00 | 綾 井 忠 彦殿 | 一 時 納 |
| 同 十月 | 500.00 | 男爵 長 與 立 吉殿 | 故長與賴吉氏 の遺志に依る |
| 同 八月 | 250.00 | 島 一 之殿 | 故島柳二氏の 遺志に依る |
| 明治四十四年七月 | 200.00 | 後 藤 半 吉殿 | 故後藤節藏氏 の遺志に依る |
| 同 八月 | 1,000.00 | 男爵 大島 富士太郎殿 | 一 時 納 |
| 同 九月 | 100.00 | 男爵 長 與 立 吉殿 | 同 上 |
| 明治四十五年二月 | 100.00 | 緒 方 正 清殿 | 同 上 |
| 同 二月 | 200.00 | 長 島 鷺太郎殿 | 同 上 |
| 大正二年 四 月 | 1,000.00 | 志 立 鐵次郎殿 | 同 上 |
| 同 五 月 | 25.00 | 檜 山 剛 三殿 | 同 上 |
| 同 六 月 | 1,500.00 | 岩 永 裕 吉殿 | 同 上 |
| 大正三年 三 月 | 1,000.00 | 岩 永 裕 吉殿 | 同 上 |
| 同 三 月 | 50.00 | 増 田 増 藏殿 | 同 上 |
| 同 四 月 | 30.00 | 志 賀 潔殿 | 同 上 |
| 同 四 月 | 700.00 | 木 下 正 中殿 | 同 上 |
| 同 四 月 | 200.00 | 益 田 達殿 | 同 上 |
| 同 四 月 | 100.00 | 男爵 森村 市左衛門殿 | 同 上 |
| 同 四 月 | 100.00 | 森 村 勇殿 | 同 上 |
| 同 四 月 | 50.00 | 安 田 善三郎殿 | 同 上 |
| 同 四 月 | 100.00 | 芝 川 又四郎殿 | 同 上 |
| 同 五 月 | 50.00 | 森 下 博殿 | 同 上 |
| 同 五 月 | 100.00 | 子爵 山 尾 庸 三殿 | 同 上 |
| 同 五 月 | 50.00 | 岸 清 一殿 | 同 上 |
| 同 五 月 | 30.00 | 藤 田 俊 一殿 | 同 上 |
| 同 五 月 | 50.00 | 田 村 寛 貞殿 | 故免禮氏慈善 基金中より |

| 年 | 月 | 金 額 | 姓 名 | 摘 要 |
|------|-----|-----------|-------------|---------------|
| 大正三年 | 五 月 | 10.00 | 山 本 厚太郎殿 | 一時納 |
| 同 | 五 月 | 50.00 | 茂木七郎右衛門殿 | 同 上 |
| 同 | 五 月 | 1,000.00 | 男爵 澁 澤 榮 一殿 | 同 上 |
| 同 | 五 月 | 50.00 | 西 村 直殿 | 同 上 |
| 同 | 五 月 | 100.00 | 堀 越 角次郎殿 | 同 上 |
| 同 | 五 月 | 500.00 | 男爵 青 山 胤 通殿 | 同 上 |
| 同 | 五 月 | 500.00 | 本 多 忠 夫殿 | 同 上 |
| 同 | 五 月 | 20.00 | 厚 本 大三郎殿 | 同 上 |
| 同 | 七 月 | 50.00 | 伊澤 平左衛門殿 | 同 上 |
| 同 | 七 月 | 200.00 | 安 川 敬一郎殿 | 同 上 |
| 同 | 七 月 | 100.00 | 松 本 健次郎殿 | 同 上 |
| 大正四年 | 三 月 | 2,500.00 | 茂 木 惣兵衛殿 | 五ヶ年賦 |
| 同 | 三 月 | 200.00 | 濱 田 捷 彦殿 | 一時納 |
| 同 | 四 月 | 10,000.00 | 男爵 岩 崎 久 彌殿 | 五ヶ年賦 |
| 同 | 四 月 | 2,000.00 | 服 部 金太郎殿 | 一時納 |
| 同 | 七 月 | 10,000.00 | 男爵 三井八郎右衛門殿 | 同 上 |
| 同 | 十二月 | 1,000.00 | 西 脇 濟三郎殿 | 同 上 |
| 大正五年 | 四 月 | 300.00 | 男爵 大鳥 富士太郎殿 | 一時納 |
| 同 | 六 月 | 10.00 | 高 木 健 一殿 | 同 上 |
| 同 | 七 月 | 150.00 | 菅 野 柘 三殿 | 同 上 |
| 同 | 九 月 | 5,000.00 | 男爵 古 河 虎之助殿 | 十ヶ年賦 |
| 同 | 十一月 | 500.00 | 侯爵 松 方 巖殿 | 一時納 |
| 同 | 十一月 | 1,000.00 | 松 原 重 榮殿 | 同 上 |
| 同 | 十一月 | 30.00 | 安 田 勇次郎殿 | 同 上 |
| 大正六年 | 三 月 | 391.46 | 小 林 房 子殿 | 故小林八十七氏の遺志に依る |
| 同 | 四 月 | 1,500.00 | 男爵 森村 市左衛門殿 | 三ヶ年賦 |
| 同 | 七 月 | 200.00 | 若 林 英 一殿 | 一時納 |
| 大正七年 | 四 月 | 100.00 | 北 村 達 郎殿 | 故北村權造氏の遺志に依る |
| 同 | 五 月 | 300.00 | 原 六 郎殿 | 一時納 |
| 同 | 十二月 | 500.00 | 男爵 森 村 開 作殿 | 同 上 |
| 同 | 十二月 | 70.00 | 男爵 青 山 徹 藏殿 | 同 上 |

| 年 | 月 | 金 額 | 姓 名 | 摘 要 |
|-------|-----|-----------|--------------|------|
| 大正八年 | 二 月 | 300.00 | 白石 元次郎殿 | 一時納 |
| 同 | 二 月 | 300.00 | 男爵 中島 久萬吉殿 | 同 上 |
| 同 | 三 月 | 200.00 | 堀越 善重郎殿 | 同 上 |
| 同 | 四 月 | 10,000.00 | 田中 銀之助殿 | 同 上 |
| 同 | 五 月 | 500.00 | 井上 準之助殿 | 一時納 |
| 同 | 七 月 | 200.00 | 若林 英 一殿 | 同 上 |
| 同 | 十 月 | 1,500.00 | 諸戸 清 六殿 | 三ヶ年賦 |
| 同 | 一 月 | 100.00 | 日比谷 新次郎殿 | 一時納 |
| 同 | 一 月 | 1,500.00 | 和田 豊 治殿 | 同 上 |
| 同 | 一 月 | 500.00 | 今村 繁 三殿 | 同 上 |
| 同 | 四 月 | 200.00 | 宇野 朗殿 | 同 上 |
| 同 | 六 月 | 1,000.00 | 八十島 誠之殿 | 同 上 |
| 大正九年 | 六 月 | 15,000.00 | 三菱 合資會社殿 | 五ヶ年賦 |
| 同 | 九 月 | 15,500.00 | 男爵 三井八郎右衛門殿 | 同 上 |
| 同 | 十二月 | 1,000.00 | 西脇 濟三郎殿 | 同 上 |
| 同 | 十二月 | 1,500.00 | 財團法人 森村 豐明會殿 | 三ヶ年賦 |
| 大正十年 | 三 月 | 50.00 | 田村 寛 貞殿 | 同 上 |
| 同 | 七 月 | 50.00 | 吉岡 キク子殿 | 同 上 |
| 大正十一年 | 一 月 | 3,000.00 | 川崎 榮 助殿 | 同 上 |
| 同 | 五 月 | 100.00 | 濱口 吉兵衛殿 | 同 上 |
| 同 | 五 月 | 100.00 | 矢野 恒 太殿 | 同 上 |
| 同 | 五 月 | 100.00 | 永田 利 之殿 | 同 上 |
| 同 | 五 月 | 100.00 | 三輪 善兵衛殿 | 同 上 |
| 同 | 五 月 | 500.00 | 男爵 森村 開 作殿 | 同 上 |
| 同 | 五 月 | 500.00 | 佐々木 隆興殿 | 五ヶ年賦 |
| 同 | 五 月 | 100.00 | 木村 清四郎殿 | 一時納 |
| 同 | 六 月 | 2,000.00 | 鹽原 又 策殿 | 五ヶ年賦 |
| 同 | 六 月 | 200.00 | 本多 忠 夫殿 | 一時納 |
| 同 | 六 月 | 500.00 | 今村 繁 三殿 | 同 上 |
| 同 | 六 月 | 5,000.00 | 服部 金太郎殿 | 五ヶ年賦 |
| 同 | 六 月 | 500.00 | 稻田 龍 吉殿 | 同 上 |

| 年 月 | 金 額 | 姓 名 | 摘 要 |
|---------|-----------|---------------|-------|
| 大正十一年六月 | 500.00 | 長 與 又 郎殿 | 五ヶ年賦 |
| 同 六 月 | 3,000.00 | 岸 敬二郎殿 | 一 時 納 |
| 同 六 月 | 2,500.00 | 大 橋 新太郎殿 | 五ヶ年賦 |
| 同 八 月 | 500.00 | 高 橋 是 賢殿 | 一 時 納 |
| 同 八 月 | 100.00 | 福 井 菊三郎殿 | 同 上 |
| 同 八 月 | 25.00 | 門 野 正 二殿 | 同 上 |
| 同 八 月 | 500.00 | 後 藤 風雲堂殿 | 五ヶ年賦 |
| 同 八 月 | 100.00 | 高 山 長 幸殿 | 一 時 納 |
| 同 八 月 | 500.00 | 若 林 英 一殿 | 二ヶ年賦 |
| 同 八 月 | 100.00 | 三 好 重 道殿 | 一 時 納 |
| 同 八 月 | 100.00 | 米 山 梅 吉殿 | 同 上 |
| 同 八 月 | 100.00 | 藝 沼 憲 二殿 | 同 上 |
| 同 九 月 | 300.00 | 阿 部 喜市郎殿 | 五ヶ年賦 |
| 同 九 月 | 500.00 | 岸 清 一殿 | 一 時 納 |
| 同 九 月 | 500.00 | 百 瀬 一 一殿 | 五ヶ年賦 |
| 同 十二月 | 100.00 | 持 田 翼殿 | 一 時 納 |
| 同 十 月 | 500.00 | 木 村 德 衛殿 | 同 上 |
| 同 六 月 | 500.00 | 土 肥 慶 藏殿 | 五ヶ年賦 |
| 同 十二月 | 1,500.00 | 磯 村 豐太郎殿 | 五ヶ年賦 |
| 同 十二月 | 500.00 | 男爵 高 木 喜 寛殿 | 同 上 |
| 同 十二月 | 500.00 | 本 多 忠 夫殿 | 同 上 |
| 同 十二月 | 500.00 | 鹽 田 廣 重殿 | 同 上 |
| 大正十二年一月 | 1,000.00 | 田 島 道 治殿 | 一 時 納 |
| 同 三 月 | 200.00 | 奥 田 永 吉殿 | 同 上 |
| 同 三 月 | 1,500.00 | 財團法人 森 村 豐明會殿 | 三ヶ年賦 |
| 同 四 月 | 1,500.00 | 男爵 益 田 孝殿 | 同 上 |
| 同 四 月 | 10,000.00 | 安 田 善次郎殿 | 五ヶ年賦 |
| 同 四 月 | 300.00 | 横 山 信 毅殿 | 一 時 納 |
| 同 四 月 | 500.00 | 佐 藤 三 吉殿 | 五ヶ年賦 |
| 大正十二年七月 | 500.00 | 侯爵 鍋 島 直 映殿 | 三ヶ年賦 |
| 同 八 月 | 500.00 | 下飯坂 長政殿 | 二ヶ年賦 |

| 年 月 | 金 額 | 姓 名 | 摘 要 |
|----------|-----------|---------------------------|------------------|
| 大正十二年十一月 | 200.00 | 肥 田 八重子殿 | 故肥田七郎氏の遺志に依る |
| 大正十三年三月 | 3,000.00 | 三共株式會社取締役 鹽 原 又 策殿 | 五ヶ年賦 |
| 同 三 月 | 1,000.00 | 男爵 佐 藤 達次郎殿 | 五ヶ年賦 |
| 同 三 月 | 100.00 | 西 山 信 光殿 | 一 時 納 |
| 同 四 月 | 200.00 | 岡 田 吉 顯殿 | 故岡田吉太郎氏の遺志に依る |
| 同 五 月 | 500.00 | 有 澤 潤殿 | 二回分納 |
| 同 六 月 | 200.00 | 土 肥 慶 藏殿 | 大學教授二十五年祝賀會記念として |
| 同 七 月 | 300.00 | 岡 田 和一郎殿 | 同 上 |
| 大正十四年一月 | 500.00 | 今 村 幸 男殿 | 一 時 納 |
| 同 二 月 | 200.00 | 中 濱 東一郎殿 | 二ヶ年賦 |
| 同 三 月 | 15,000.00 | 男爵 三井八郎右衛門殿 | 五ヶ年賦 |
| 同 四 月 | 10,000.00 | 神戸衛生實驗所取締役 社長 百 崎 俊 雄殿 | 九ヶ年賦 |
| 同 六 月 | 10,000.00 | 財團法人 阪上慈善財團理事 菊 地 恭 三殿 | 四ヶ年賦 |
| 同 七 月 | 500.00 | 關 場 不 二彦殿 | 還置記念として |
| 同 八 月 | 15,000.00 | 三 菱 合 資會社殿 | 五ヶ年賦 |
| 同 九 月 | 200.00 | 五 味 龜太郎殿 | 一 時 納 |
| 同 九 月 | 1,000.00 | 辰 馬 悅 藏殿 | 山極博士研究費指定 |
| 同 九 月 | 1,000.00 | 辰 馬 も 舞殿 | 同 上 |
| 同 九 月 | 1,500.00 | 財團法人 森 村 豐明會殿 | 二ヶ年賦 |
| 同 十一月 | 1,500.00 | 大 倉 和 親殿 | 故大倉美智氏の遺志に依る |
| 同 十一月 | 1,500.00 | 大 倉 和 親殿 | 故田中愛子氏の遺志による |
| 大正十五年一月 | 500.00 | 小谷野 格康殿 | 亡父の遺志に依る |
| 昭和 二 年二月 | 1,500.00 | 磯 村 豐太郎殿 | 五ヶ年賦 |
| 同 二 月 | 2,500.00 | 大 橋 新太郎殿 | 五ヶ年賦 |
| 同 二 月 | 500.00 | 南 大 曹殿 | 五ヶ年賦 |
| 同 二 月 | 500.00 | 青 木 菊 雄殿 | 同 上 |
| 同 二 月 | 500.00 | 本 田 雄五郎殿 | 同 上 |
| 同 三 月 | 2,500.00 | 財團法人 和 田 薰幸會殿 | 五ヶ年賦 |

| 年 月 | 金 額 | 姓 名 | 摘 要 |
|--------|-----------|-------------------------|----------------------|
| 昭和二年六月 | 5,000.00 | 服部 金太郎殿 | 五ヶ年賦 |
| 同 六 月 | 600.00 | 侯爵 鍋島 直映殿 | 三ヶ年賦 |
| 同 八 月 | 400.00 | 多門 重雄殿 | 亡父の遺志に依り |
| 同 八 月 | 1,000.00 | 西脇 濟三郎殿 | 五ヶ年賦 |
| 同 八 月 | 500.00 | 百瀬 一一殿 | 五ヶ年賦 |
| 同 十二月 | 2,000.00 | 辰馬 悅藏殿 | 山極博士研究費指定 |
| 同 十二月 | 1,000.00 | 辰馬 も舞殿 | 同 上 |
| 昭和三年二月 | 3,000.00 | 小田柿 捨次郎殿 | 三ヶ年賦 |
| 同 二 月 | 5,000.00 | 小野 俊一殿 | 亡父の遺志に依り(日本興業銀行株券百株) |
| 同 三 月 | 500.00 | 杉本 東造殿 | 五ヶ年賦 |
| 同 六 月 | 500.00 | 平田 篤次郎殿 | 三ヶ年賦 |
| 同 十 月 | 500.00 | 平山 金藏殿 | 五ヶ年賦 |
| 同 十 月 | 2,000.00 | 財團法人 安田修徳會 理事長男爵 平山 成信殿 | 一時納 |
| 同 十 月 | 10,000.00 | 鹽原 又策殿 | 十ヶ年賦 |
| 同 七 月 | 100.00 | 柳 莊太郎殿 | 一時納 |
| 昭和四年五月 | 1,500.00 | 財團法人 森村 豊明會 | 三ヶ年賦 |
| 昭和五年二月 | 15,000.00 | 三菱 合資會社殿 | 五ヶ年賦 |
| 同 三 月 | 15,000.00 | 三井合名會社 男爵 三井八郎右衛門殿 | 同 上 |
| 同 十二月 | 3,000.00 | 淺野 泰次郎殿 | 一時納 |
| 昭和六年四月 | 100.00 | 石戸 有一殿 | 同 上 |
| 昭和七年四月 | 2,000.00 | 財團法人 安田 修徳會 | 同 上 |
| 同 四 月 | 1,500.00 | 財團法人 森村 豊明會殿 | 三ヶ年賦 |
| 昭和八年二月 | 10,000.00 | 長尾 欽彌殿 | 一時納 |
| 同 二 月 | 500.00 | 田 中 良殿 | 同 上 |
| 同 三 月 | 1,000.00 | 田代 重三殿 | 二ヶ年賦 |
| 同 三 月 | 500.00 | 昭和生命保險株式會社殿 | 五ヶ年賦 |
| 同 四 月 | 800.00 | 日清生命保險株式會社殿 | 同 上 |
| 同 四 月 | 350.00 | 東海生命保險相互會社殿 | 同 上 |
| 昭和八年四月 | 800.00 | 東洋生命保險株式會社殿 | 五ヶ年賦 |

| 年 | 月 | 金 額 | 氏 名 | 摘 要 |
|---------|-----|----------|--------------|-----|
| 同 | 四 月 | 6,500.00 | 千代田生命保險相互會社殿 | 同 上 |
| 同 | 四 月 | 150.00 | 中央生命保險相互會社殿 | 同 上 |
| 同 | 四 月 | 600.00 | 片倉生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 350.00 | 橫濱生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 500.00 | 大正生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 350.00 | 國光生命保險相互會社殿 | 同 上 |
| 同 | 四 月 | 6,000.00 | 明治生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 100.00 | 國華徵兵保險株式會社殿 | 同 上 |
| 同 | 四 月 | 250.00 | 蓬萊生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 400.00 | 常盤生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 750.00 | 太陽生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 2,250.00 | 安田生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 1,100.00 | 仁壽生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 500.00 | 太平生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 6,500.00 | 第一生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 1,000.00 | 共保生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 400.00 | 富國徵兵保險相互會社殿 | 同 上 |
| 同 | 四 月 | 1,750.00 | 大同生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 5,500.00 | 帝國生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 250.00 | 福壽生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 1,250.00 | 三井生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 500.00 | 第一徵兵保險株式會社殿 | 同 上 |
| 同 | 四 月 | 150.00 | 富士生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 600.00 | 福德生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 750.00 | 有隣生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 1,250.00 | 愛國生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 6,500.00 | 日本生命保險株式會社殿 | 同 上 |
| 同 | 四 月 | 250.00 | 日本徵兵保險株式會社殿 | 同 上 |
| 同 | 五 月 | 1,100.00 | 日華生命保險株式會社殿 | 同 上 |
| 同 | 七 月 | 2,000.00 | 近 藤 友右衛門殿 | 一時納 |
| 昭和 八 年十 | 月 | 200.00 | 佐 竹 清殿 | 同 上 |

| 年 | 月 | 金 額 | 民 名 | 摘 要 |
|---|-----|-----------|---------------------------|-------------------------|
| 同 | 十 月 | 200.00 | 高 村 庄 太 郎殿 | 一 時 納 |
| 同 | 十 月 | 100.00 | 西 業 求殿 | 同 上 |
| 同 | 十 月 | 100.00 | 高 橋 三 千 彦殿 | 同 上 |
| 同 | 十 月 | 200.00 | 木 積 一 次殿 | 同 上 |
| 同 | 十 月 | 200.00 | 今 村 荒 男殿 | 同 上 |
| 同 | 十 月 | 15,000.00 | 社長 住友合資會社 男爵 住 友 吉左衛門殿 | 五ヶ年賦 |
| 同 | 十一月 | 100.00 | 鶴 岡 庄 七殿 | 一 時 納 |
| 同 | 十二月 | 1,500.00 | 名 倉 重 雄殿 英 二殿 | 一 時 納 故あい氏の遺 志に依る |

合計 金參拾六萬壹千四百四拾壹圓四拾六錢

(研究費指定寄附者 二百十八名)

(二) 御下賜金並癌研究所及康樂病院建設資金指定寄附者芳名

御下賜金 金壹萬圓也

(昭和四年十一月二十八日)

| 年 月 | 金 額 | 氏 名 | 摘要 |
|-----------|-----------|----------|---------------------------------|
| 昭和 三 年十一月 | 1,000.00 | 遠 山 正 路殿 | 二回分納 遠山椿吉氏の 遺志に依る 五ヶ年賦 |
| 同 十一月 | 1,000.00 | 高 橋 源太郎殿 | 一 時 納 |
| 昭和 四 年三 月 | 500.00 | 島 村 浅 夫殿 | 同 上 |
| 同 三 月 | 500.00 | 本 多 春 子殿 | 同 上 |
| | ラジウム元素 | 本 多 春 子殿 | 療治費用として七耗像 |
| 同 四 月 | 300.00 | 小 野 俊 一殿 | 一 時 納 |
| 同 四 月 | 500.00 | 陸 奥 廣 吉殿 | 同 上 |
| 同 四 月 | 1,000.00 | 佐 多 愛 彦殿 | 同 上 |
| 同 十 月 | 1,000.00 | 田 村 精 一殿 | 同 上 |
| 同 十二月 | 5,000.00 | 磯 村 豊太郎殿 | 四ヶ年賦 |
| 同 十二月 | 2,000.00 | 木 村 徳 衛殿 | 同 上 |
| 同 十二月 | 2,000.00 | 長 與 又 郎殿 | 同 上 |
| 同 十二月 | 2,000.00 | 佐々木 隆 興殿 | 同 上 |
| 同 十二月 | 1,000.00 | 高 木 喜 寛殿 | 同 上 |
| 同 十二月 | 2,000.00 | 宮 川 米 次殿 | 同 上 |
| 同 十二月 | 15,000.00 | 森村市左衛門殿 | 六ヶ年賦 |
| 同 十二月 | 2,000.00 | 稲 田 龍 吉殿 | 四ヶ年賦 |
| 同 十二月 | 2,000.00 | 鹽 田 廣 重殿 | 五ヶ年賦 |
| 同 十二月 | 2,000.00 | 南 大 曹殿 | 同 上 |
| 同 十二月 | 1,000.00 | 菊 池 循 一殿 | 同 上 |
| 同 十二月 | 100.00 | 中 原 和 郎殿 | 一 時 納 |
| 昭和 五 年一 月 | 50.00 | 福 田 保殿 | 五回分納 |
| 同 一 月 | 50.00 | 鈴 木 逢殿 | 一 時 納 |
| 同 一 月 | 500.00 | 杏 林 舎殿 | 五ヶ年賦 |
| 同 一 月 | 300.00 | 山 川 保 城殿 | 一 時 納 |
| 同 一 月 | 1,000.00 | 樋 口 一 成殿 | 一 時 納 |
| 同 一 月 | 2,000.00 | 赤 司 鷹一郎殿 | 故樋口繁次氏の 遺志に依る 一 時 納 |
| 同 一 月 | 1,000.00 | 田 中 次 郎殿 | 二回分納 |

發明實施研
究所所長
雨潤會
會長 伯爵

男爵

森村豐明會
會長 男爵

合資會社

安田修徳
會理事長

| 年 | 月 | 金 額 | 氏 名 | 摘 要 |
|------|----|-----------|----------|-------------------|
| 昭和五年 | 二月 | 1,000.00 | 南條 金雄殿 | 一時納 |
| 同 | 二月 | 1,000.00 | 佐藤 三吉殿 | 二ヶ年賦 |
| 同 | 二月 | 1,000.00 | 島 菌 順次郎殿 | 一時納 |
| 同 | 二月 | 500.00 | 稻垣 長次郎殿 | 五ヶ年賦 |
| 同 | 二月 | 500.00 | 鈴木 島吉殿 | 一時納 |
| 同 | 二月 | 100.00 | 林 春雄殿 | 同上 |
| 同 | 二月 | 1 000.00 | 緒方 知三郎殿 | 五ヶ年賦 |
| 同 | 二月 | 2,000.00 | 岩垂 享殿 | 二ヶ年賦 |
| 同 | 二月 | 1,000.00 | 大倉 和親殿 | 一時納 |
| 同 | 二月 | 1,000.00 | 川添 正道殿 | 五ヶ年賦 |
| 同 | 二月 | 100.00 | 高田 畔安殿 | 一時納 |
| 同 | 二月 | 50.00 | 小喜多 晴雄殿 | 同上 |
| 同 | 二月 | 100.00 | 市川 厚一殿 | 同上 |
| 同 | 二月 | 100.00 | 佐藤 清殿 | 同上 |
| 同 | 二月 | 100.00 | 白井 宏殿 | 同上 |
| 同 | 二月 | 300.00 | 松田 祐作殿 | 三ヶ年賦 |
| 同 | 二月 | 50.00 | 矢追 秀武殿 | 一時納 |
| 同 | 二月 | 30.00 | 奥田 永吉殿 | 同上 |
| 同 | 二月 | 300.00 | 馬杉 復三殿 | 二ヶ年賦 |
| 同 | 三月 | 50.00 | 村山 小七郎殿 | 同上 |
| 同 | 三月 | 50.00 | 柏木 正俊殿 | 一時納 |
| 同 | 三月 | 10,000.00 | 和田 織衣殿 | 五ヶ年賦 |
| 同 | 三月 | 10,000.00 | 近藤 滋彌殿 | 同上 |
| 同 | 三月 | 500.00 | 吳 建殿 | 一時納 |
| 同 | 三月 | 300.00 | 青山 徹藏殿 | 同上 |
| 同 | 三月 | 50.00 | 横川 定殿 | 二同分納 |
| 同 | 三月 | 500.00 | 山極 二郎殿 | 同上 故山極博士の遺志に依る |
| 同 | 三月 | 200.00 | 高橋 信殿 | 二ヶ年賦 |
| 同 | 三月 | 500.00 | 瀬川 昌世殿 | 一時納 |
| 同 | 三月 | 100.00 | 西山 信光殿 | 同上 |
| 同 | 三月 | 100.00 | 鯉沼 祐吾殿 | 一時納 |

株式會社後
藤風雲堂財團和田蕭幸會
法人男爵

男爵

| 年 | 月 | 金 額 | 氏 名 | 摘 要 |
|--------|---|-----------------------|--------------------|---------------------|
| 昭和五年三月 | 月 | 2,000.00 ^四 | 杉本 東造殿 | 五ヶ年賦 |
| 同 三 月 | 月 | 1,000.00 | 武智 直道殿 | 一時納 故武智菊子氏の遺志に依る |
| 同 三 月 | 月 | 100.00 | 森 茂樹殿 | 二ヶ年賦 |
| 同 三 月 | 月 | 5.00 | 尼子 四郎殿 | 一時納 |
| 同 四 月 | 月 | 300.00 | 木村 哲二殿 | 三ヶ年賦 |
| 同 四 月 | 月 | 100.00 | 鹿兒島 茂殿 | 一時納 |
| 同 四 月 | 月 | 500.00 | 内藤 久寛殿 | 同上 故藤子氏の遺志に依る |
| 同 四 月 | 月 | 1,000.00 | 河本 禎助殿 | 五ヶ年賦 十分納 |
| 同 四 月 | 月 | 200.00 | 五味 龜太郎殿 | 一時納 |
| 同 四 月 | 月 | 100.00 | 鈴江 懷殿 | 一時納 |
| 同 四 月 | 月 | 200.00 | 松本 留吉殿 | 同上 |
| 同 四 月 | 月 | 50.00 | 太田 恒麿殿 | 同上 |
| 同 四 月 | 月 | 5,000.00 | 堀越 角次郎殿 | 五ヶ年賦 |
| 同 四 月 | 月 | 1,000.00 | 木村 平右衛門殿 | 二ヶ年賦 |
| 同 四 月 | 月 | 50.00 | 東京女子醫學專門學校 學生 一同御中 | 一時納 |
| 同 五 月 | 月 | 300.00 | 高橋 明殿 | 同上 |
| 同 五 月 | 月 | 1,000.00 | 磐瀬 雄一殿 | 同上 |
| 同 五 月 | 月 | 2,000.00 | 福士 政一殿 | 五ヶ年賦 |
| 同 五 月 | 月 | 10.00 | 姊崎 正治殿 | 一時納 |
| 同 五 月 | 月 | 20.00 | 無 名 氏 | 同上 |
| 同 五 月 | 月 | 2,000.00 | 山本 留次殿 | 一時納 |
| 同 六 月 | 月 | 100.00 | 佐藤 敏夫殿 | 一時納 |
| 同 六 月 | 月 | 300.00 | 鹽谷 不二雄殿 | 二ヶ年賦 |
| 同 六 月 | 月 | 20.00 | 渡邊 治殿 | 一時納。亡父の遺志に依る |
| 同 七 月 | 月 | 500.00 | 八田 善之進殿 | 五ヶ年賦 |
| 同 七 月 | 月 | 20,000.00 | 末延 道成殿 | 二ヶ年賦 |
| 同 七 月 | 月 | 500.00 | 阿部 又三郎殿 | 一時納 |
| 同 十 月 | 月 | 1,000.00 | 勝沼 精藏殿 | 三ヶ年賦 |
| 同 十 月 | 月 | 3,000.00 | 侯爵 井上 三郎殿 | 同上 |
| 同 十 月 | 月 | 3,000.00 | 兒玉 米子殿 | 故兒玉一造氏の遺志に依る |
| 同 十 月 | 月 | 200.00 | 高橋 進太郎殿 | 故高橋徳次氏の遺志に依る |

| 年 月 | 金 額 | 氏 名 | 摘 要 |
|--------|-----------|--------------|------|
| 昭和五年十月 | 100.00 | 土田 土用五郎殿 | 一時納 |
| 同 十月 | 200.00 | 五味 文郎殿 | 同 上 |
| 同 十月 | 20.00 | 島澤 雅子殿 | 同 上 |
| 同 十月 | 100.00 | 有島 健助殿 | 同 上 |
| 同 十月 | 20.00 | 杉 孫助殿 | 同 上 |
| 同 十月 | 10.00 | 北川 義三殿 | 同 上 |
| 同 十月 | 30.00 | 龜井 寅雄殿 | 同 上 |
| 同 十月 | 100.00 | 西脇 嘉市殿 | 同 上 |
| 同 十月 | 15.00 | 岡田 音吉殿 | 同 上 |
| 同 十月 | 100.00 | 淺井 光之助殿 | 同 上 |
| 同 十月 | 10.00 | 熊谷 敬一殿 | 同 止 |
| 同 十月 | 5.00 | 妹尾 博太殿 | 同 上 |
| 同 十月 | 5.00 | 平松 與三郎殿 | 同 上 |
| 同 十月 | 5.00 | 近藤 久男殿 | 同 上 |
| 同 十月 | 10.00 | 遠藤 勇殿 | 二ヶ年賦 |
| 同 十月 | 10.00 | 株式會社 春 泉 堂殿 | 一時納 |
| 同 十月 | 300.00 | 井口 乘海殿 | 一時納 |
| 同 十月 | 5.00 | 豐田 富雄殿 | 同 上 |
| 同 十一月 | 100.00 | 藤浪 鑑殿 | 一時納 |
| 同 十二月 | 2,000.00 | 德川家御一家御中 | 一時納 |
| 昭和六年二月 | 2,000.00 | 財團法人 安田 修德會殿 | 一時納 |
| 同 三月 | 300.00 | 木下 正中殿 | 一時納 |
| 同 三月 | 2,500.00 | 公爵 德川 慶光殿 | 五ヶ年賦 |
| 同 三月 | 20,000.00 | 財團法人 原田 積善會殿 | 二ヶ年賦 |
| 同 三月 | 500.00 | 西郷 吉彌殿 | 一時納 |
| 同 六月 | 200.00 | 中西 久殿 | 同 上 |
| 同 六月 | 100.00 | 平井 政光殿 | 同 上 |
| 同 七月 | 500.00 | 男爵 新田 義美殿 | 同 上 |
| 同 八月 | 30,000.00 | 三井 合名會社殿 | 三ヶ年賦 |
| 同 八月 | 30,000.00 | 三菱 合資會社殿 | 同 上 |
| 同 九月 | 5,000.00 | 子爵 澁澤 敬三殿 | 五ヶ年賦 |

| 年 | 月 | 金 額 | 姓 | 名 | 摘 要 |
|-----------|-----|----------|--------|----------|--|
| 同 | 十 月 | 1,000.00 | 中 野 | 金太郎殿 | 五ヶ年賦 |
| 同 | 十 月 | 2,000.00 | 西 村 | 熊太郎殿 | 同 上 |
| 同 | 十二月 | 100.00 | 藤 浪 | 鑑殿 | 第二回申込 |
| 同 | | 300.00 | 大 鳥 | 良 子殿 | 故男爵大鳥富士太郎氏の遺志に依る |
| 昭和 七 年一 月 | | 50.00 | 大 沼 | 貞 藏殿 | 五回分納 |
| 同 | 三 月 | 200.00 | 佐 藤 | 恒 丸殿 | 一 時 納 |
| 同 | 五 月 | 300.00 | 遠 山 | 郁 三殿 | 二ヶ年賦 |
| 同 | 五 月 | 250.00 | 須 藤 | 壽殿 | 亡父末吉氏遺志に依る |
| 同 | 八 月 | 100.00 | 渡 邊 | 仁殿 | 一 時 納 |
| 同 | 九 月 | 1,000.00 | 今 野 | 晋 三殿 | 五回分納 |
| 同 | 十 月 | 1,500.00 | 平 山 | 次 郎殿 | 亡父金藏氏の遺志に依る |
| 同 | 十 月 | 1,000.00 | 上 田 | 厚 吉殿 | 一 時 納 |
| 同 | 十 月 | 30.00 | 瀧 本 | 桂殿 | 一 時 納 |
| 同 | 十一月 | 50.00 | 小野塚 | 喜平次殿 | 同 上 |
| 同 | 十二月 | 1,000.00 | 入 澤 | 達 吉殿 | 同 上 |
| | | 100.00 | 釋尼貞養 | 遺 贈 | 杉岡幸次氏納メ |
| 同 | 十二月 | 500.00 | 子爵 澁 澤 | 敬 三殿 | 亡父寛二氏の遺志に依り康樂病院へ二ヶ年賦 診療所用X光線器械購入費中へ第三回申込 |
| 昭和 八 年一 月 | | 9,500.00 | 菊 池 | 恭 三殿 | |
| 同 | 一 月 | 100.00 | 藤 浪 | 鑑殿 | |
| 同 | 一 月 | 書 籍 | 佐 藤 | 亨殿 | |
| 同 | 二 月 | 100.00 | 有馬研究所 | 有 馬 頼 吉殿 | 一 時 納 |
| 同 | 二 月 | 15.00 | 故 増 田 | みつ子殿 | 一 時 納 |
| 同 | 三 月 | 5,000.00 | 岸 | 光恵子殿 | 長興寺頭紹介故母頼太郎第七回忌供養として |
| 同 | 三 月 | 2,000.00 | 日比谷平 | 左衛門殿 | 一 時 納 |
| 同 | 七 月 | 1,000.00 | 久 保 | 徳太郎殿 | 故夫人の遺志として |
| 同 | 八 月 | 500.00 | 山 本 | 茂三郎殿 | 一 時 納 |
| 同 | 九 月 | 200.00 | 望 月 | 望殿 | 一 時 納 |
| 同 | 九 月 | 1,000.00 | 門 馬 | 直 記殿 | 故盛三博士の遺志に依り |
| 同 | 十 月 | 1,000.00 | 鹽 野 | 義三郎殿 | 五ヶ年賦 |
| 同 | 十二月 | 30.00 | 無 | 名 氏 | 一 時 納 |

合計金貳拾四萬九千百五圓也

(建設指定寄附者 百五十名)

物品寄贈者芳名

1. 大正13年4月, X光線用「レリリエンフェルド」管球二個
田中辰二殿
2. 昭和4年3月, 「ラヂウム」原素, 癌治療用として七耗餘
本多春子殿
3. 昭和7年9月癌研究所及康樂病院に於て使用する衛生陶器一式
135個
東洋陶器株式會社社長 大倉和親殿
4. 昭和8年3月16日, 同上に於て使用する皿類及「コーヒー」
茶碗480個
日本陶器株式會社社長 廣瀬實光殿

| 品番 | 數量 | 品名 |
|--------------|------|--------------|
| Rc 127/Bw 21 | 10dz | Dinner plate |
| Rc 128/ " | 10 " | Cake " |
| Rc 129/ " | 10 " | Bread " |
| Rc 258/ " | 10 " | C/Saucer |

5. 昭和8年1月29日
 - 1) Beiträge zur pathologischer Anatomie und zur
Allgemeinen Pathologie.
Bd. 1—88 (1886—1932)
Supplement 1—9
Register 1.
 - 2) Frankfurter Zeitschrift für Pathologie.
Bd. 1—43 (1907—1931)

佐藤亨殿

小室論文正誤表

Druckfehlerberichtigung zur Arbeit 小室

癌細胞に對する新染色方式の適用技法と其の效果に就きて

(Über das Verfahren mit einer neuen Färbungsmethode für Krebszellen
nach 小室 (KOMURO und dessen Applikationswert.)

| 頁 | 行 | 誤 | 正 |
|-----------|------------|---|--------------|
| Seite 245 | : Zeile 24 | : statt Altersschwäz | Altersschwäz |
| Seite 248 | : Zeile 28 | : statt Mamma | Mamma |
| Seite 258 | : Zeile 6 | : statt Veränderungen in die kolloidalen Zustände und die.... muß es heißen: Veränderungen der kolloidalen Zustände und der protein-physicochemi- schen Verhältnisse des Protoplasmas. | |

財團法人癌研究會會員名簿

(昭和八年十月二調) (ABC順)

●名譽會員

| | | |
|----------|----------|---------------------|
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| 男爵 | 岩崎 小彌太 | 東京市麴町區丸ノ内二ノ四 三菱合資會社 |
| | 稻田 龍吉 | 東京市神田區駿河臺二丁目九ノ九 |
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| | 諸戶 清六 | 三重縣桑名町 |
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| | 大橋 新太郎 | 東京市麴町區上六番町四三 |
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| | 小田柿 健一 | 東京市芝區高輪南町三〇 |
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| 男爵 | 佐藤 達次郎 | 東京市四谷區尾張町七 |
| | 佐藤 亨 | 東京市麴町區中六番町二四 |
| | 佐藤 三吉 | 東京市小石川區鵜籠町二二九 |
| | 鹽原 又策 | 東京市日本橋區室町三丁目一〇 |
| | 志立 錢次郎 | 東京市麻布區飯倉町六丁目一三 |
| | 佐々木 隆興 | 東京市神田區駿河臺一丁目 |
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| | 島岡 順次郎 | 東京市本鄉區駒込千駄木町五〇 |
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| | 田中 辰三 | 東京市麴町區中六番町二一 |

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 辰馬 も舞
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 遠山 正路
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 高橋 源太郎
 公爵 徳川 家達
 公爵 徳川 慶光
 武智 直道
 上田 厚吉
 和田 織衣
 安田 善次郎
 八十島 誠之
 山本 留次

●特別會員

田村 寛貞
 少喜多 晴雄

●通常會員

Aの部

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 阿部 賚夫
 青木 薫
 男爵 青山 徹藏
 足立 修
 赤星 明
 浅見 忠衛
 尼子 富士郎
 雨宮 量七郎
 有馬 宗雄

Dの部

土肥 章司

兵庫縣西宮市
 兵庫縣西宮市
 神戸市林田區二番丁二丁目一 神戸衛生實
 験所
 東京市芝區白金三光町四五一
 東京市麻布區東鳥居坂町一三
 東京府下保谷村下保谷三六五
 東京市澁谷區千駄ヶ谷町三三〇
 東京市小石川區第六天町五四
 東京市麻布區市兵衛町二丁目一三
 東京市澁谷區松濤五二
 東京市麻布區筈町一一六 和田薰幸會
 東京市麴町區永樂町二丁目一 安田保善社
 東京市芝區白金臺町一丁目七一
 東京市神田區駿河臺北甲賀町二一

東京市牛込區余丁町三五
 京都帝國大學醫學部病理學教室

東京市小石川區原町一二五
 東京市淀橋區十二社二六一
 仙臺市北二番町五〇
 東京市本郷區弓町二丁目二六
 長野縣屋代驛前
 鹿兒島市下荒田町一三二
 東京市四谷區荒木町二七
 東京市本郷區駒込千駄木町五四
 東京市北多摩郡砧村喜多見二七〇
 東京市四谷區慶應義塾大學醫學部病理細菌
 學教室

東京市麴町區下六番丁四八

Fの部

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 福士 政一
 福田 保
 福島 俊行
 藤浜 剛一
 藤縄 喜代藏
 古畑 種基
 深瀬 周一
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東京市本郷區駒込西片町九
 東京市本郷區弓町二丁目二四
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 朝鮮釜山獣疫血清製造所
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 神戸市 兵庫縣立神戸病院胃腸科
 金澤市白山町一四六
 東京市麴町區一ノ二日比谷病院
 長崎市城山町南一條五四 時政方

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後藤 健介

宇都宮市江野町三、一一一 外科双葉醫院

Hの部

芳賀 榮次郎
 八田 善之進
 林 郁彦
 林 賀太郎
 林 曄
 林 直助
 林 春雄
 原田 定次
 原田 美實
 平井 政道
 平石 貞市
 廣瀬 豊一
 細野 順
 堀内 彌二郎
 本田 郁也
 本田 雄五郎
 本名 文任
 秦 清三郎

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 長崎市櫻馬場町一四六
 東京市本郷區駒込東片町九七
 東京市牛込區辨天町七四
 名古屋市東區東二葉町一七
 東京市大森區田園調布町三〇四
 東京市杉並區上荻窪町五〇三
 千葉醫科大學病理學教室
 東京市牛込區矢來町四三
 東京市日本橋區濱町二丁目一
 大阪市西區江戸堀下通一ノ三一
 東京市澁谷區澁谷町向山三〇
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 京都府立醫科大學病理學教室
 東京市京橋區銀座西五丁目五
 臺北市千歲町二丁目三八
 東京市本郷區西片町一〇にノ二四號

I の部

- 井手 政雄
 井深 健次
 井上 善次郎
 伊藤 是
 猪子止 戈之助
 飯島 庸徳
 池田 武雄
 池田 三雄
 池田 泰雄
 石川 正臣
 石橋 松藏
 石原 喜久太郎
 石原 俊士
 一色 嗣武
 市川 厚一
 稻垣 長次郎
 稻本 龜五郎
 今井 潔
 今牧 甲子男
 今村 荒男
 岩佐 新
 岩永 仁雄
 岩鶴 龍三
 尹 日善
- 長崎醫科大學附屬病院外科教室
 東京市澁谷區千駄ヶ谷町五丁目八九〇
 千葉市新町二四七五
 千葉市 千葉醫科大學病理學教室
 京都市堺中京區町三條上ル
 中華民國北平東單三條胡同 同仁醫院
 橫濱市相生町三ノ五五 關東病院
 東京市小石川區林町四
 東京市小石川區林町四
 東京市本郷區西片町一の六〇號
 千葉市長洲九九一
 東京市中野區櫻山町一一
 高松市松島町高松病院
 東京市深川區富吉町一〇
 北海道帝國大學農學部比較病理學教室
 東京市大森區新井宿一丁目二二七二
 京都市上京區小山花木町三八
 新潟縣新津町
 三重縣津市 乙部館病院內
 兵庫縣西宮市南郷町五七
 東京市麴町區一番町一三
 兵庫縣西宮市森貝六七四
 大阪市西區西道頓堀通四丁目一〇
 朝鮮京城府冷洞四二

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 神保 孝太郎
- 朝鮮木浦府々立病院産婦人科
 東京市本郷區元町一丁目六

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 鹿兒島 茂
 片山 久壽頼
 勝沼 六郎
 古武 彌四郎
- 靜岡縣小笠郡土方村
 熊本市出水町今七三六
 橫濱市 中區山手町
 愛知縣西尾町錦城
 兵庫縣武庫郡御影町字榎本一三二ノ一

- | | |
|--------|---------------------|
| 桂田 富士郎 | 神戸市神戸區下山手通り五丁目三〇 |
| 上川 豐 | 臺北市新莊街樂生院 |
| 神尾 友修 | 東京市神田區旅籠町二ノ一三 |
| 金子 義晃 | 東京市豐島區駒込九八九 |
| 川上 漸 | 東京市杉並區上井草町三六 |
| 川添 正道 | 東京市四谷區慶應義塾大學醫學部産婦人科 |
| 川村 麟也 | 新潟市學校通二番町 |
| 河北 眞太郎 | 東京市淀橋區百人町二ノ四九 |
| 河野 敦信 | 岩手縣宮古町三郡共立病院 |
| 河本 禎助 | 東京市小石川區久堅町五八 |
| 木内 幹 | 函館市富岡町五 |
| 木塚 新 | 山口市日本赤十字社病院外科部長 |
| 木下 良順 | 札幌市北海道帝國大學醫學部病理學教室 |
| 木下 正中 | 東京市麴町區九段三丁目四 |
| 木戸 幾久男 | 新潟醫科大學病理學教室 |
| 木村 嘉一 | 京都府立醫科大學産婦人科 |
| 木村 敬義 | 東京市本郷區西片町一〇に三三號 |
| 木村 男也 | 仙臺市北六番町二三〇 |
| 木村 哲二 | 東京市赤坂區青山南町五丁目三七 |
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| 菊地 精三 | 弘前市市立弘前病院 |
| 菊地 徧一 | 東京市日本橋區本石町三ノ二ノ四 |
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| 沓掛 諒 | 東京市目黒區下目黒三丁目六五七 |
| 吳 建 | 東京市神田區駿河臺二丁目九 |
| 小室 英夫 | 京都市左京區田中大久保町六八ノ一 |
| 小柳 千足 | 秋田縣由利郡本莊町中堅町一七 |
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| 今 裕 | 札幌市北海道帝國大學醫學部病理學教室 |
| 近藤 次繁 | 東京市神田區駿河臺一丁目六 |

近藤 潤平
紺野 義重

東京市本郷區龍岡町二三
名古屋市中區山陽町一ノ八 杉田和敬方

Mの部

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| 眞鍋 嘉一郎 | 東京市麴町區飯田町六丁目一九 |
| 前田 松苗 | 大阪市東區小橋西ノ町一ノ二九 |
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| 松岡 久作 | 東京市京橋區築地聖路加國際病院 |
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| 水野 禮司 | 中華民國上海法租界祁濟路一二〇 上海自然科學研究所 |
| 宮入 清四郎 | 東京市澁川區西ヶ原町二一二 |
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| 宮原 立太郎 | 東京市芝區田村町五ノ一四 |
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| 向山 孝之 | 神奈川縣鎌倉町大町辻一二一 |
| 村上 幸多 | 東京市小石川區丸山町二一 |
| 村田 宮吉 | 大阪帝國大學醫學部病理學教室 |
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| 森 茂樹 | 熊本醫科大學病理學教室 |

森田 平治郎

森元 良雄

森安 連吉

東京市豊島區目白町四ノ四三

大阪市東區東雲町三丁目二四九

東京市牛込區新小川町三丁目四

Nの部

中泉 正徳

中島 壽

中西 龜太郎

中原 和郎

中村 八太郎

中村 盛雄

中本 完二

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西 業求

西井 烈

西野 忠次郎

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東京市中野區櫻山町一一

東京市芝區白金臺町 傳染病研究所

京都市上京區中立賣通室町西へ入

東京市豊島區目白町一丁目一一四一

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松江市 母衣町島根縣立松江病院

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東京市四谷區東信濃町二八

函館市天神町七五

東京市日本橋區濱町三丁目二一

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小澤 凱夫

小澤 修造

小畑 惟清

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名古屋市中區水主町は五十

東京市小石川丸山町一九

滿洲國撫順西公園町二ノ一

札幌市北十二條東二丁目

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S の部

| | |
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| 佐藤 恒丸 | 東京市澁谷區永住町一四 |
| 佐藤 敏夫 | 東京市芝區今入町三 |
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| 櫻根 好之助 | 大阪帝國大學醫學部皮膚泌尿器科教室 |
| 澤本 富次郎 | 東京市本郷區湯島天神町二丁目一二 |
| 澤田 敬義 | 新潟市營所通一 |
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| 鈴木 達 | 熊本醫科大學病理學教室 |
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| | 東京市本郷區弓町二丁目三四 |

關 守男

關場 不二彦

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七五三 龜吉

神奈川縣高座郡上溝町二八〇三

札幌市北一條西一丁目五

濱松市安女町

東京市品川區五反田五丁目一〇六

東京市芝區白金臺町二ノ一七

石川縣大聖寺町字鷹匠町一四

T の部

田代 義徳

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田宮 猛雄

田村 於兎

田村 春吉

田村 弘隆

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多田羅 正俊

高田 耕安

高野 六郎

高橋 明

高橋 敬三

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常久 哲

角田 隆

鶴田 禎次郎

遠山 郁三

東京市下谷區練辨町六一

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高松市五番町

神奈川縣茅ヶ崎町

東京市四谷區南寺町二三

東京市本郷區千駄木町五二

横須賀市若松町七三

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奉天滿洲醫科大學內科

大阪市東區道修町四丁目二

長崎醫科大學病理學教室

東京市四谷區三光町一

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大阪府堺市大濱北町一九

東京市大森區大森町二二

東京市本郷區駒込西片町一〇ろノ一號

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東京市大森區大森山王二五七一

廣島市小町六一ノ二

京都府立醫科大學病理學教室

東京市澁谷區千駄ヶ谷町五丁目

東京市板橋區練馬南町一丁目三四八一

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Uの部

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浦本 正 熊本市米屋町

Wの部

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Yの部

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吉本 清太郎 東京市麻布町櫻田町三〇

●購讀者

日本赤十字社病院
北大醫學部醫院圖書室
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| 額田 晋 | 東京市大森區帝國女子醫學藥學專門學校 |
| 大阪帝大小澤外科教室 | 大阪帝國大學醫學部內 |
| 上海自然科學研究所 | 中華民國上海法租界祁齊路一二二 |
| 名譽會員 | 七七名 |
| 特別會員 | 二名 |
| 通常會員 | 二五九名 |
| 購讀者 | 二二名 |
| 合計 | 三六〇名 |

會員各位の論文を募る

本會發行の『癌』は山極先生の創刊以來既に二十有五年を経過し本邦に於ける癌研究界唯一無二の寶庫であるを信じます。夫れ癌に關する研究及研究の奨励、その豫防撲滅を目的とする本會は毎に是等の向上發達を期して居る次第でありまして、癌研究所、同治療所の建設、學術集談會の開催、癌に關する優秀業績への授賞、會誌の發行、研究費の補助並に癌に關する豫防知識の普及等に勉めて居ります、就中會誌『癌』は主として會員諸氏の論文、調査、實驗其他苟くも參考となるべきものは盡く蒐めて同人に報告し、又遠く諸外國の各教室、研究所並に病院等に紹介し、永く後世に傳へんことを期して居ります。

會員諸氏に於かせられては本會の右の主旨を御了承下さいまして癌に關する研究事項は細大さなく本誌上に御發表あらん事を切にお薦め致します。實は本會癌研究費補助規定に依り研究費の補助を受けたる者は癌に關する原著又は抄録を本會誌に必ず發表すべき事に昭和六年九月二十二日の理事會に於て決議致して居るのでありますから之を勵行せられる事を希望致します。

財團法人癌研究會編輯部

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- 一、文體。文體は口語體、又は文語體にて差支ありませんが必ず歐文抄録をつけて戴きます。
- 二、宛名。原稿は本會宛のこ。
- 三、内容。記事は簡潔を旨とし冗長ならぬこ。
- 四、別刷。別刷は希望により五十部迄進呈いたします。
- 五、圖表。圖表の餘り多い分に對しては實費を戴きます。

以上

昭和八年十二月二十六日印刷

昭和八年十二月三十日發行

癌

邦文(歐文抄録付)年四回發行

一册正價金壹圓五拾錢

一册郵税金四錢

東京市麻布區市兵衛町二ノ八八

編輯者
發行

長 與 又 郎

東京市本郷區駒込林町百七十二番地

印刷者

柴 山 則 常

東京市本郷區駒込林町百七十二番地

印刷所

合資
會社 杏 林 舍

東京市豐島區西巢鴨二丁目二千六百十五番地

發行所 財團法人 癌 研 究 會

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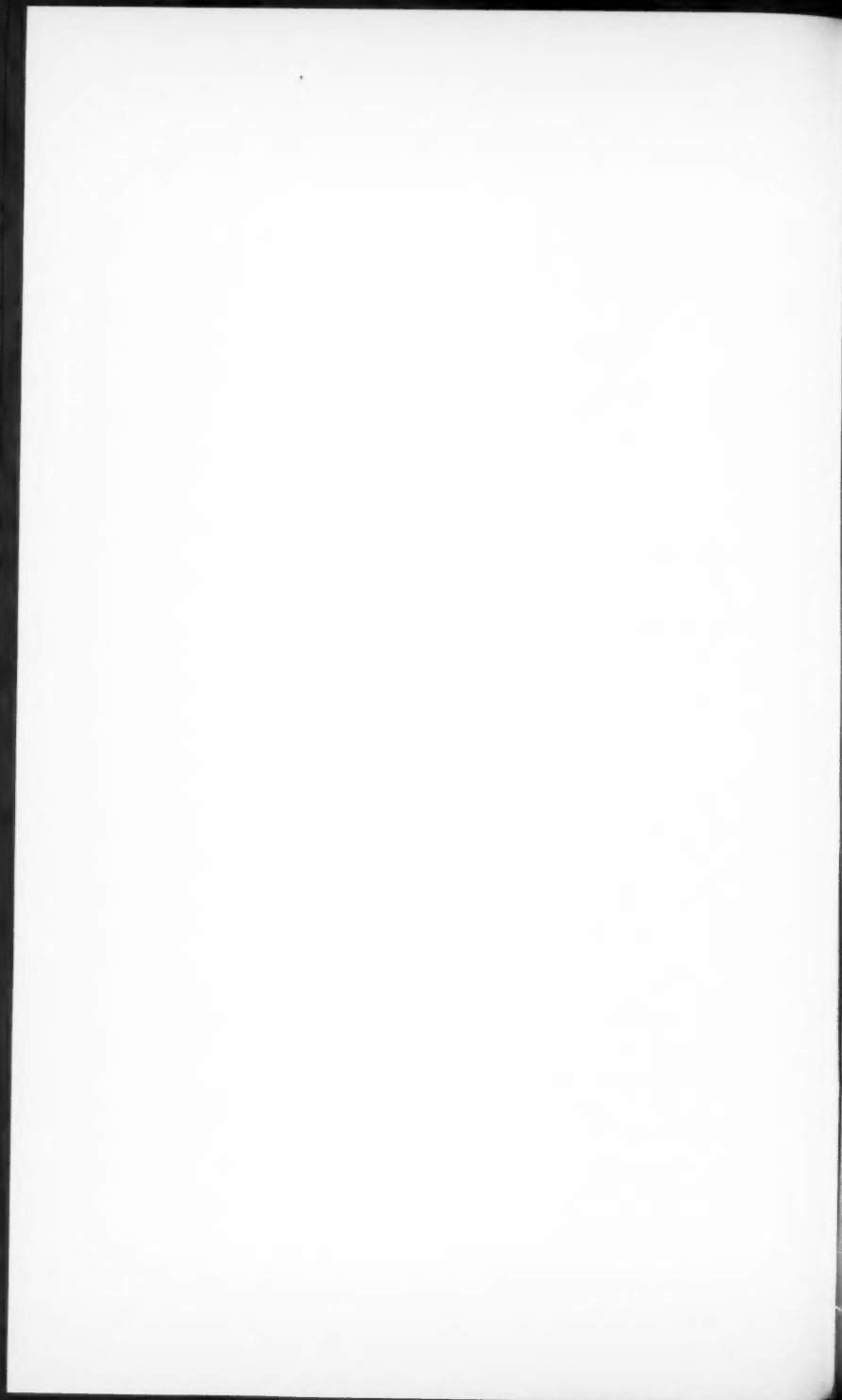
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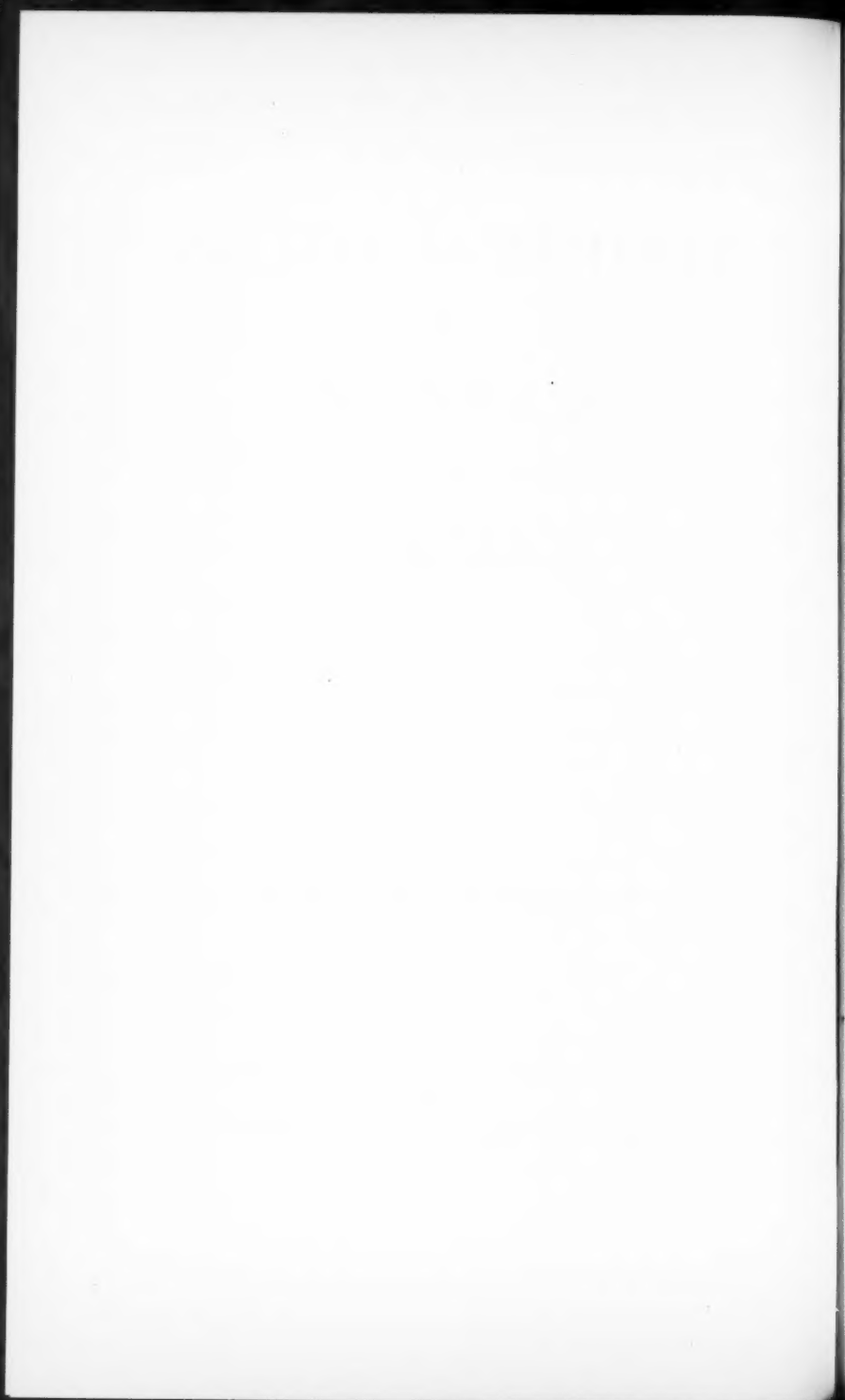
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STATISTICAL STUDIES
ON
CANCER
IN
JAPAN

MATARO NAGAYO, M.D.

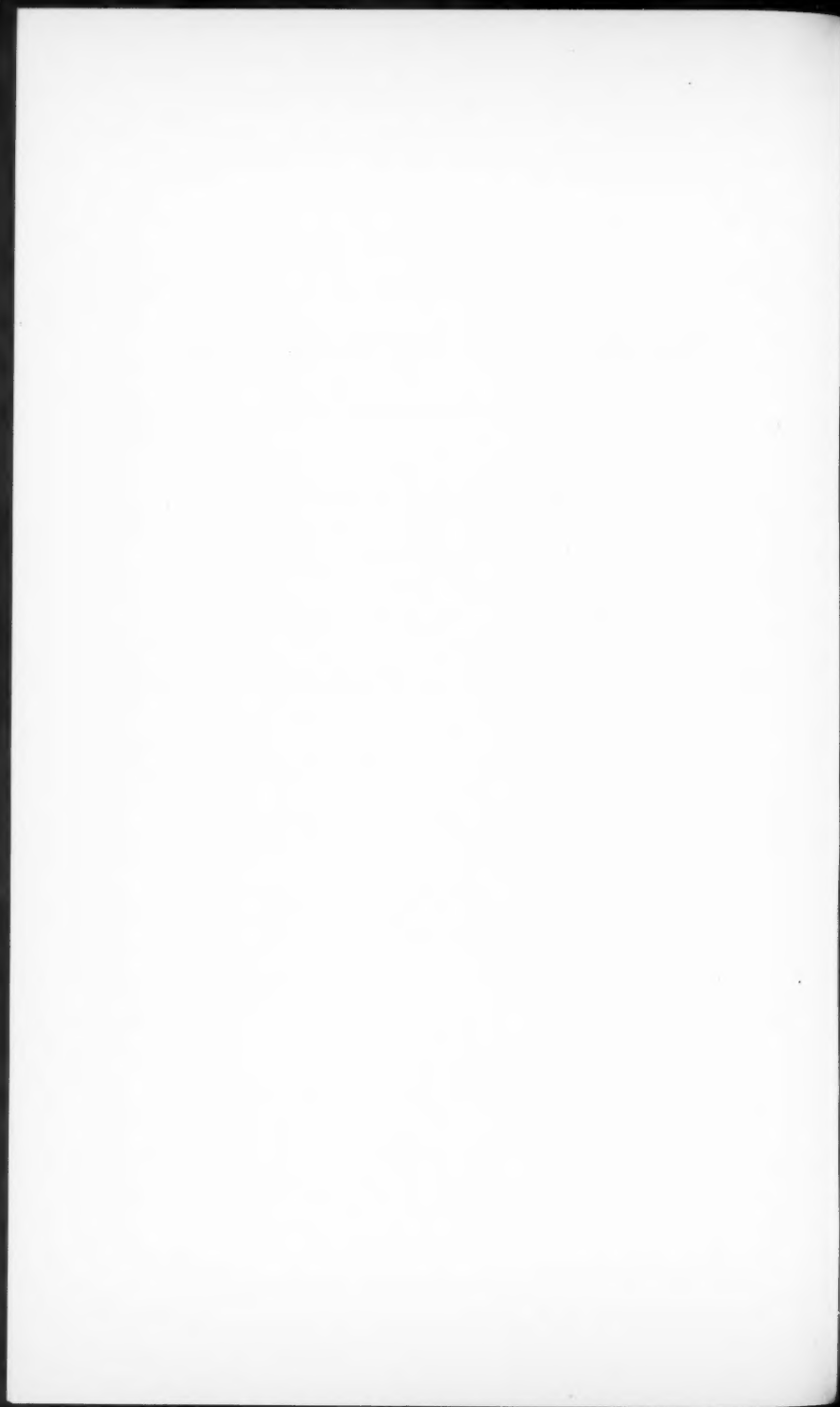
PATHOLOGICAL INSTITUTE, TOKYO IMPERIAL UNIVERSITY
AND
THE JAPANESE SOCIETY OF CANCER RESEARCH.



To the Memory of
Tanemitz Aoyama and Tadao Honda,
Former Presidents
of
The Japanese Society of Cancer Research,
This Work is Respectfully Dedicated
On the Occasion of the Completion of
The Laboratory and Kōraku Hospital of the Society.

The Author

December, 1933.



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INTRODUCTION.

The general aspect of cancer mortality in Japan, as well as the relative frequency of cancer in different organs can be gleaned from the vital statistics of the Bureau of Census, Imperial Japanese Government, which gives reliable data on the actual number of cancer deaths, and their distribution in sexes, age groups and localities. Statistical work in Japan is well recognized as among the foremost in the world, and it is especially convenient that the Bureau of Census prepares annual statistics under a fixed plan, which renders easy a comparison of figures from year to year. The statistics of this Bureau follow the general scheme of the International system of classification so that there is the additional convenience of easy comparison with foreign statistics. However, in the classification of cancer according to the organs the Bureau of Census adopts the minor system, including the index group numbers of from 43 to 49, and, therefore, it is not possible to look further into the frequency of cancer in individual organs. It must also be kept in mind that the statistics of the Bureau of Census are based on the death certificates sent in by the general medical profession, and there is a doubt as to the accuracy of the diagnosis given in these death certificates. This last point applies not only to Japanese statistics, but also to any of the foreign data. Some idea of this situation may be obtained by the accounts of death from alleged "senility", which ranks first among all causes of death in recent German and French statistics. Diagnosis may be expected to be fairly accurate as far as cancers of the exposed parts of the body are concerned, but in some cases the situation is quite otherwise in dealing with cancers of internal organs. It has been the experience of pathologists that clinical diagnosis of cancer or non-cancer is not always substantiated by autopsy findings, as I shall again emphasize in Part IV of this paper. It is thus

obvious that not only is it impossible to make detailed observation of cancer development in individual organs on the basis of vital statistics, but the vital statistics themselves have some unsatisfactory points. The main purpose of my present investigation has been to obtain data representing as closely as possible the real situation, and compare these data with what is known in foreign countries, pointing out differences that may thus be brought to light, and discussing the possible causes for the differences observed. Vital statistics are admittedly inadequate for such a purpose.

The necessity of investigating cancer mortality through autopsy material can hardly be overemphasized, but while such material is most accurate as to the diagnosis, there is the drawback of the insufficient number and of limitation as to the source of the material. From this point of view, even vital statistics and statistics of pathological institutes taken together are still insufficient to yield a true picture of the situation. In order to overcome some of the inadequacies I started since 1928 to collect cancer statistics from various university clinics and hospitals where accuracy of clinical diagnosis may be assumed with a certain degree of safety. Such cancer statistics have been most generously compiled and donated to me by a large number of competent authorities all over Japan, and it is a pleasure to express my appreciation for their wholehearted cooperation. With this kind of statistics, in addition to the first two sorts, it may be hoped that a study may be attempted with some hope of success of the relative frequency of cancer in various organs in Japan.

This paper consists of four parts. Part I deals with observations on vital statistics, and tables in this part are designated with the letter A. Statistics based on clinically diagnosed cases make up Part II (B tables); while Part III is devoted to the consideration of materials in pathological institutes (C tables). In each part the conditions in Japan are compared with foreign data. Finally, in Part IV, (D tables) a general examination of the entire statistics is

undertaken, at the same time discussing several important questions regarding cancer in Japan in the light of the knowledge gained by the present statistical investigation.

Part I.

Observations based on Vital Statistics.

CHAPTER I.

COMPARISON OF THE NUMBER OF DEATHS FROM CANCER AND FROM OTHER MAJOR DISEASES.

1. CONDITIONS IN JAPAN.

In order to compare the number of deaths in recent years from cancer and from other major diseases in Japan, we tabulate relevant data from the vital statistics compiled by the Bureau of Census of the Imperial Japanese Government (Table A I). This table includes figures for 1915, 1920, 1924, 1929 and 1930, the last being the most recent of the available data. Under the names of diseases are given corresponding international group numbers for the causes of death.

Table A I.

Number of Deaths from Major Diseases in Japan, based
on the vital statistics of the Bureau of Census,
Imperial Japanese Government.

| | | 1915 | 1920 | 1924 | 1929 | 1930 |
|--|---------|---------|---------|---------|---------|---------|
| Diarrhea & Enteritis VI (25) | Males | 57,708 | 70,196 | 74,834 | 77,283 | 70,693 |
| | Females | 59,981 | 71,895 | 76,884 | 79,453 | 71,890 |
| | Total | 117,689 | 142,091 | 151,718 | 156,736 | 142,583 |
| Pneumonia & Broncho- pneumonia V (22) | Males | 45,127 | 88,551 | 65,224 | 64,241 | 53,976 |
| | Females | 40,887 | 87,123 | 58,179 | 56,940 | 47,070 |
| | Total | 86,014 | 175,674 | 123,403 | 121,181 | 101,046 |
| Influenza I (9) | Males | | 53,555 | | | |
| | Females | | 54,873 | | | |
| | Total | | 108,428 | | | |
| Cerebral Haemorrhage and Softening of the Brain III (18) | Males | 37,248 | 49,166 | 57,752 | 60,108 | 58,120 |
| | Females | 30,485 | 38,955 | 44,914 | 48,143 | 46,615 |
| | Total | 67,733 | 88,061 | 102,666 | 108,251 | 104,735 |

| | | 1915 | 1920 | 1924 | 1929 | 1930 |
|---|---------|---------|---------|-----------|-----------|-----------|
| Pulmonary Tuberculosis I (13) | Males | 41,090 | 42,971 | 40,164 | 45,563 | 44,933 |
| | Females | 42,164 | 44,131 | 39,246 | 42,877 | 41,149 |
| | Total | 83,254 | 87,102 | 79,410 | 88,440 | 86,082 |
| Senility XIII (34) | Males | 24,616 | 30,663 | 30,486 | 32,189 | 31,535 |
| | Females | 37,730 | 42,800 | 43,517 | 46,992 | 45,056 |
| | Total | 59,346 | 73,463 | 74,003 | 79,181 | 76,591 |
| Malformation & Congenital Debility XII (33) | Males | 29,035 | 35,457 | 39,005 | 37,116 | 41,029 |
| | Females | 25,753 | 31,130 | 33,343 | 31,326 | 34,072 |
| | Total | 54,788 | 66,587 | 72,348 | 68,442 | 75,102 |
| Nephritis VII (29) | Males | 19,576 | 27,321 | 31,441 | 32,596 | 31,659 |
| | Females | 19,488 | 28,222 | 38,786 | 32,795 | 31,776 |
| | Total | 39,064 | 55,543 | 62,227 | 65,391 | 63,435 |
| Meningitis III (17) | Males | 35,458 | 35,797 | 34,880 | 27,778 | 24,481 |
| | Females | 33,101 | 33,410 | 33,586 | 26,519 | 23,051 |
| | Total | 68,559 | 69,207 | 68,464 | 54,097 | 47,532 |
| Cancer II (16) | Males | 18,784 | 20,113 | 20,266 | 21,257 | 21,793 |
| | Females | 17,973 | 19,402 | 19,881 | 21,240 | 21,743 |
| | Total | 36,757 | 39,515 | 40,147 | 42,497 | 43,536 |
| | | *(+783) | *(+813) | *(41,312) | *(43,734) | *(44,902) |
| Organic Diseases of the Heart IV (19) | Males | 15,480 | 16,252 | 18,681 | 18,696 | 17,908 |
| | Females | 17,114 | 18,423 | 20,551 | 19,897 | 19,578 |
| | Total | 32,594 | 34,675 | 39,232 | 38,593 | 37,486 |
| Death from External Cause XIV (35) | Males | 15,606 | 16,977 | 17,634 | 18,373 | 18,078 |
| | Females | 8,402 | 8,282 | 8,496 | 8,564 | 8,509 |
| | Total | 24,008 | 25,259 | 26,130 | 26,937 | 26,587 |
| Disease of the Stomach VI (24) | Males | 18,868 | 16,395 | 13,570 | 12,410 | 12,641 |
| | Females | 19,200 | 15,614 | 12,647 | 10,491 | 10,276 |
| | Total | 38,068 | 32,009 | 26,217 | 22,901 | 22,917 |

The above table shows that during the sixteen years between 1915 to 1930, cancer ranked ninth as important cause of death in Japan, with the exception of 1920 when many deaths occurred from the severe and world wide epidemic of influenza. As cause of death,

* Figures in parentheses represent the total numbers for cancer and other malignant tumors.

cancer follows in importance pneumonia and bronchopneumonia, cerebral haemorrhage and encephalomalacia, pulmonary tuberculosis, nephritis, meningitis, diarrhea and enteritis, senility, malformation and congenital debility, etc., and precedes organic diseases of the heart, external causes, gastric diseases, etc. Among the causes of death, senility can hardly be classed as a specific disease. Diarrhea and enteritis are diseases of infancy. If we disregard these two categories and malformation and congenital debility, we find that cancer comes up to the sixth place as an important cause of death

Table A II.

Deaths from various major Diseases in Japan.

| Diseases | Ratio per 1000 of total deaths (1930) | | | Ratio per 10,000 of total population (1930) | | |
|---|---------------------------------------|-------|---------|---|-------|---------|
| | Both Sexes | Males | Females | Both Sexes | Males | Females |
| Diarrhea & Enteritis VI (25) | 121.8 | 117.1 | 126.8 | 21.9 | 21.9 | 21.8 |
| Cerebral Haemorrhage and Softening of the Brain III (18) | 89.5 | 96.2 | 82.2 | 16.1 | 17.9 | 14.6 |
| Pneumonia & Broncho- pneumonia V (22) | 86.3 | 89.4 | 83.0 | 15.6 | 16.6 | 14.7 |
| Pulmonary Tuberculosis I (13) | 73.5 | 74.4 | 72.6 | 13.3 | 13.9 | 12.9 |
| | 65.4 | 52.2 | 79.5 | 11.9 | 9.8 | 14.0 |
| Malformation & Con- genital Debility XII (33) | 64.1 | 67.9 | 60.1 | 11.6 | 12.6 | 10.6 |
| Nephritis VII (39) | 54.2 | 52.4 | 56.1 | 9.8 | 9.8 | 9.9 |
| Meningitis III (17) | 40.6 | 40.5 | 40.7 | 7.6 | 7.6 | 7.5 |
| Cancer II (16) | 37.2 | 36.1 | 38.4 | 6.8 | 6.7 | 6.8 |
| Organic Diseases of the Heart IV (19) | 32.0 | 29.1 | 34.5 | 5.8 | 5.5 | 6.1 |
| Death from External Cause XIV (35) | 22.1 | 29.1 | 15.0 | 4.1 | 5.6 | 2.7 |
| Disease of the Stomach VI (24) | 19.1 | 20.9 | 18.0 | 3.5 | 3.9 | 3.2 |

in Japan, killing over 43,000 persons annually, including about the same number of males and females.

No marked change in the relative position of other diseases took place in recent years, but it may be pointed out as noteworthy that pulmonary tuberculosis continues to rank high, that meningitis and diseases of stomach show a tendency toward decrease, and that cerebral haemorrhage and softening of the brain as well as nephritis are on the increase.

The ratio of the number of deaths from the major diseases mentioned above against the total number of deaths was calculated for 1930. The deaths for that year were 603,995 males and 566,871 females, totaling 1,170,867, from which the following ratios per 1000 were obtained for the major diseases (Table A II). In this table ratios of various diseases for the average population of 10,000 persons are also shown. The total population of Japan proper on October 1, 1930 was 32,390,155 males, and 32,059,850 females, totaling 64,450,005.

Actual number of deaths for 1930 including both sexes, from important diseases, other than those in the above table, may be given here for reference :

| | | | |
|---------------------------|--------|--------------------|--------|
| Typhoid fever, | 8,350 | Pleurisy | 16,581 |
| Measles, | 5,965 | Liver cirrhosis | 4,652 |
| Scarlet fever | 303 | Acute bronchitis | 14,344 |
| Whooping-cough | 7,437 | Chronic bronchitis | 13,586 |
| Diphtheria | 4,079 | Suicide | 13,944 |
| Epidemic influenza | 5,207 | Syphilis | 6,016 |
| Dysentery | 2,839 | Beri-beri | 15,419 |
| Intestinal and peritoneal | | Diabetis | 2,247 |
| tuberculosis | 22,302 | Peritonitis | 20,207 |

According to the data of the Bureau of Census, the number of deaths from cancer is not as striking as in England and in America, but the number seems to be gradually increasing. Classification of cancer deaths according to the organs involved will

not be tabulated here, since the ratio for different organs showed no noteworthy change during the past twenty years.

2. COMPARISON WITH FOREIGN COUNTRIES.

Actual number of deaths from several major diseases and the ratio of each against the total deaths, and ratio per average population of 10,000 persons are tabulated for England, America, France, Germany and Holland (Table A III.). The data were taken from the International Year Book for 1930, vol. VI, published in 1932 by the Health Section of the League of Nations. Holland was selected as a representative example of countries where the death rate is low, in order to make a comparison with other countries. Italy was not included in the Year-Book, Russian statistics were unavailable outside of those concerning acute infectious diseases, and there were no statistics of any sort for China. It is unfortunate, that the circumstances rendered it impossible to include these countries in our comparison.

As may be seen from the above table, in the *U. S. A.* heart diseases ranked first and cancer third in 1927, but the number of cancer deaths was almost the same as that of deaths from external causes, which ranked second. Nephritis, cerebral haemorrhage pneumonia, pulmonary tuberculosis follow in the order given. Cancer deaths increased from 88,623 (9.5) in 1925 to 95,105 (9.9) in 1927, advancing from the fourth to the third place in the course of two years.

The *U. S. A.* statistics for 1900 places pulmonary tuberculosis in the first rank, with 62,096 (11.5) deaths, followed by pneumonia, 55,523 (10.3), diarrhea and enteritis, 40,985 (7.6), heart diseases, 40,985 (7.5), and nephritis, malformation and congenital debility, external causes, cerebral haemorrhage, in the order given, and cancer came next, with 19,371 (3.6) deaths, ranking ninth in importance as cause of death. This is in striking contrast to the 1927 statistics, and even if we allow for the marked recent advance in

the diagnosis of cancer, it is not to be denied that cancer has been greatly on the increase during recent years. The remarkable increase of death from heart diseases and decrease of deaths from pulmonary tuberculosis and from diarrhea and enteritis in the U. S. A. are merely reflections of the recent social and hygienic conditions in that country.

In *England* we find no appreciable change between the statistics for 1927 and for 1929. In 1929 heart diseases were classed as first in importance as causes of death, and cancer with 56,890 (14.37) deaths, was rated second. Other causes of death were pneumonia, acute and chronic bronchitis, pulmonary tuberculosis, cerebral haemorrhage, external causes, senility, etc., in the order of importance. It resembles the U. S. statistics in that heart disease and cancer occupy the first and second places respectively, but the ratio of cancer deaths is greater than in the U. S. A. The Japanese ratio of 6.8 is only slightly over one-half that of the English ratio. The cancer death rate in England is greater than in other important countries, as may be seen in tables to be referred to later.

In *France* statistics for 1928 place heart diseases in the second rank, with 61,810 (15.2) deaths, lung tuberculosis third, with 57,462 (14.14) deaths while senility is placed first with 88,284 (21.7) deaths. This is worthy of special notice. A similar condition holds also in Germany, where senility occupied the first rank among causes of death in 1927, though falling to the second rank in 1928. The fourth rank is occupied in French death statistics by cerebral haemorrhage, fifth rank by cancer, with 39,140 (9.7) deaths, followed in order by bronchitis, external causes, nephritis, diarrhea and enteritis, pneumonia, etc.

In *Germany*, in 1928, cancer replaced senility in 1927 as the most important cause of death, number of cancer deaths amounting to 81,461 (12.8). Second rank is taken by senility, third by pneumonia, fourth by lung tuberculosis, and fifth place by external causes, cerebral haemorrhage, diarrhea and enteritis, etc., in the

Table

Total Number and Ratio per 10,000 persons of Deaths

| | U. S. A | | England & Wales | |
|--|----------------------|----------------------|--|---|
| | 1925 | 1927 | 1927 | 1929 |
| Pulmonary Tuberculosis | 64,143 (6.81) | 62,394 (6.53) | — | 31,425 (7.93) |
| Cancer | 88,623 (9.5) | 95,105 (9.9) | 54,078 * (13.76) 44,274 (11.27) | 56,896 * (14.37) 47,513 (12.0) |
| Cerebral Haemorrhage & Softening of the Brain | 79,756 (8.5) | 82,230 (8.6) | 25,238 (6.42) | 25,215 (6.37) |
| Organic Diseases of the Heart | 179,139 (19.2) | 196,658 (20.5) | 72,109 (18.35) | 96,467 (24.36) |
| Pneumonia & Broncho- pneumonia | 88,205 (9.4) | 78,957 (8.2) | 37,242 (9.48) | 43,864 (11.07) |
| Diarrhea & Enteritis | 35,728 (3.8) | 24,981 (2.6) | 6,197 (1.58) | 7,069 (1.78) |
| Nephritis | 91,461 (9.8) | 91,299 (9.5) | 13,852 (3.52) | 15,512 (3.91) |
| Senility | 10,130 (1.1) | 9,058 (0.9) | 22,753 (5.79) | 21,180 (5.35) |
| Death from External Cause | 92,263 (9.9) | 96,321 (10.0) | 20,122 (5.12) | 21,895 (5.53) |
| Suicide | 11,472 (1.2) | 13,089 (1.4) | 4,907 (1.25) | 4,984 (1.26) |
| Acute and Chronic Bronchitis | 6,228 (0.7) | 5,365 (0.6) | 33,021 (8.40) | 33,378 (8.43) |
| Number of Total Deaths Rate per 10,000 | 1,100,876 (119.0) | 1,107,888 (115.3) | 484,609 (123.3) | 532,492 (134.4) |

Total number of deaths.

N.B.: Figures in parentheses represent ratio per 10,000 persons of

* Total figure for cancer and other malignant tumors.

A III.

from major Diseases in Five Foreign Countries.

| France | | Germany | | Holland | |
|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|
| 1927 | 1928 | 1927 | 1928 | 1927 | 1928 |
| — | 57,462 (14.14) | — | 46,427 (7.30) | | 4,730 (6.14) |
| 38,508 (9.5) | 39,140* (9.7) | 77,063 (12.2) | 81,461 (12.8) | 9,168 * (12.1) | 9,202 * (12.3) |
| | | | | 8,798 (11.8) | 8,869 (12.0) |
| 39,182 (9.65) | 39,967 (9.83) | 40,803 (6.5) | 41,416 (6.5) | 4,166 (5.5) | 4,800 (6.2) |
| 59,731 (14.7) | 61,810 (15.2) | — | — | 9,071 (11.9) | 8,717 (11.0) |
| 18,975 (4.40) | 17,889 (4.41) | 60,414 (9.6) | 59,438 (9.3) | 6,873 (9.1) | 6,714 (8.71) |
| 13,081 (3.22) | 18,312 (4.52) | 18,420 (2.9) | 17,810 (2.8) | 1,424 (1.8) | 1,400 (1.8) |
| 18,156 (4.47) | 18,755 (4.62) | ? | ? | 2,677 (3.5) | 2,763 (3.8) |
| 88,894 (21.9) | 88,284 (21.7) | 81,499 (12.9) | 75,341 (11.8) | 3,957 (5.2) | 4,001 (5.3) |
| 19,861 (4.9) | 20,274 (5.0) | 42,223 (6.6) | 43,705 (6.9) | 2,070 (2.74) | 2,236 (2.98) |
| 7,907 (1.95) | 7,774 (1.91) | 15,974 (2.5) | 16,036 (2.5) | 557 (0.72) | 533 (0.68) |
| 33,021 (8.40) | 23,431 (5.93) | ? | ? | 2,134 (2.5) | 1,794 (2.2) |
| 675,540 (166.1) | 674,046 (166.0) | 757,020 (120.0) | 739,520 (116.0) | 77,614 (102.45) | 73,805 (96.12) |

population.

order named. (The Year-Book gives no statistical figures for heart diseases and nephritis in Germany).

Holland. Statistics for 1928, as in the case of Germany, place cancer first as the cause of death with the actual number of 8,869 (12.0) followed by heart disease with 8,717 (11.0) and other causes in the following order: pneumonia, cerebral haemorrhage, pulmonary tuberculosis, senility, nephritis, external causes, diarrhea and enteritis.

All the statistics reviewed above differ markedly from the Japanese statistics in placing cancer among the most important causes of death; the first rank being given to cancer in Germany and in Holland, and second rank in England and the U. S. A. Even France, where cancer death is small compared to other European countries, with 39,140 (9.7) deaths, rates cancer higher than Japan as a cause of death. Among important European countries Italy shows least deaths from cancer, and the cancer death rate there seems to be approximately the same as in Japan.

Among diseases other than cancer, death statistics of the several important European countries differ from the Japanese statistics in the great importance of organic diseases of the heart, which occupies the first place in England and in the U. S. A., and second place in France and Holland. (The condition in Germany is not known). In Japan heart disease takes the tenth place, which is a striking deviation. Pulmonary tuberculosis is fairly important in France, taking the third rank, but in other countries this disease is becoming less important. It is noteworthy, also, that senility ranks high in German and French statistics, external causes in American figures.

Total cancer deaths (males and females combined) and cancer death rate per 10,000 of population of different countries reported in the International Year-Book for 1930 and Bulletin Mensuel XXIV-XXV, Office International d'Hygiene Publique, may be arranged in the order of figures as follows.

Table A IV.
Cancer Death Rate for 18 Countries.

| Total number of Deaths | | Rate per 10,000 of population | Year |
|------------------------|--------|----------------------------------|------|
| Denmark | 5,070 | 14.4 | 1929 |
| England & Wales | 56,896 | 14.4 | " |
| Scotland | 7,108 | 14.2 | " |
| Switzerland | 5,696 | 14.1 | 1930 |
| Holland | 9,400 | 12.1 | 1929 |
| Sweden | 7,330 | 11.9 | 1927 |
| Norway | 3,291 | 11.7 | 1928 |
| Germany | 72,529 | 11.4 | " |
| Czechoslovakia | 16,239 | 11.1 | 1929 |
| Irish Free State | 3,116 | 10.6 | " |
| * U. S. A | 95,103 | 9.9 | 1927 |
| New Zealand | 1,382 | 9.8 | 1929 |
| Australia | 6,256 | 9.8 | " |
| France | 39,140 | 9.7 | 1928 |
| Belgium | 7,276 | 9.1 | " |
| Hungary | 7,827 | 9.1 | 1929 |
| Spain | 15,819 | 7.0 | " |
| Japan | 43,536 | 6.8 | 1930 |
| Italy | 25,724 | 6.3 | 1929 |

It is said that in Europe cancer is more prevalent in northern parts than in southern countries. From an ethnological viewpoint certain authorities maintain that cancer is found more often among Anglo-Saxons and Teutons than among Latin stocks. These points do not seem to be merely traditional but to have some real basis

* According to the latest report of F. L. Hoffman. "The Cancer Record of 1932", the total population of 180 cities in the U. S. A. is 42,518,779, of which number 49,585 died of cancer. The cancer death rate per 100,000 persons increased to 116.6 (1931), and in 1932 it further increased to 50,636 deaths with the rate of 117.0, showing a difference from 9.9 in 1927.

in fact, as shown in the above table.

A reliable comparison of these European conditions with the case of Asiatic races is not to be attempted at present, for the reason that among the Asiatic countries Japan alone possesses cancer statistics that are at all reliable. It must also be remembered that statistical figures can vary greatly according to the condition under which the data are collected, implying that a given statistical figure may not represent the actual state of affairs as they stand. In spite of all these possible drawbacks, it cannot be denied that a careful comparison and observation on statistics compiled from various sources and with different methods will give a generally true picture. From all the available cancer statistics, it would seem safe to conclude that Japan does not belong among the countries with specially high cancer incidence.

CHAPTER II.

EXAMINATION OF CANCER STATISTICS CLASSIFIED ACCORDING TO THE ORGANS.

1. CONDITIONS IN JAPAN.

In discussing the relative frequency of cancer in various countries, it is more significant, in the opinion of the writer, to investigate the cancer incidence in each organ of the body than to study the total number of cancer cases. The genesis of cancer is conditioned by a large number of complex factors, and it seems entirely reasonable to think that the organs most frequently attacked by cancer may be different among different countries due to the peculiar mode of living, geographical and racial peculiarities, etc., of each country.

It is conceivable that difference in customs, habits and other modes of living may be in some way related to the difference in frequency of cancer in the different countries. It seems especially clear that the different kinds and methods of preparation of food may affect the development of cancer in the digestive system, for example, the use of beverages of high alcohol content. It is also generally acknowledged that there is a relation between the habits of different people and the development of skin cancer. There is, therefore, sufficient ground for supposing that a similar relation may exist for the development of cancer in internal organs. Inquiries along this line may yield a clue as to the true nature of the causation of cancer in the human species, and it is with some such idea in mind that we proceed to the examination of cancer statistics classified according to the organs involved.

According to the vital statistics of the Japanese Empire for 1930 compiled by the Japanese Government Bureau of Census, the total number of cancer deaths is 43,536, made up of 21,793 males and 21,743 females. These, classified according to the organs following the International system of classification, are as follows:

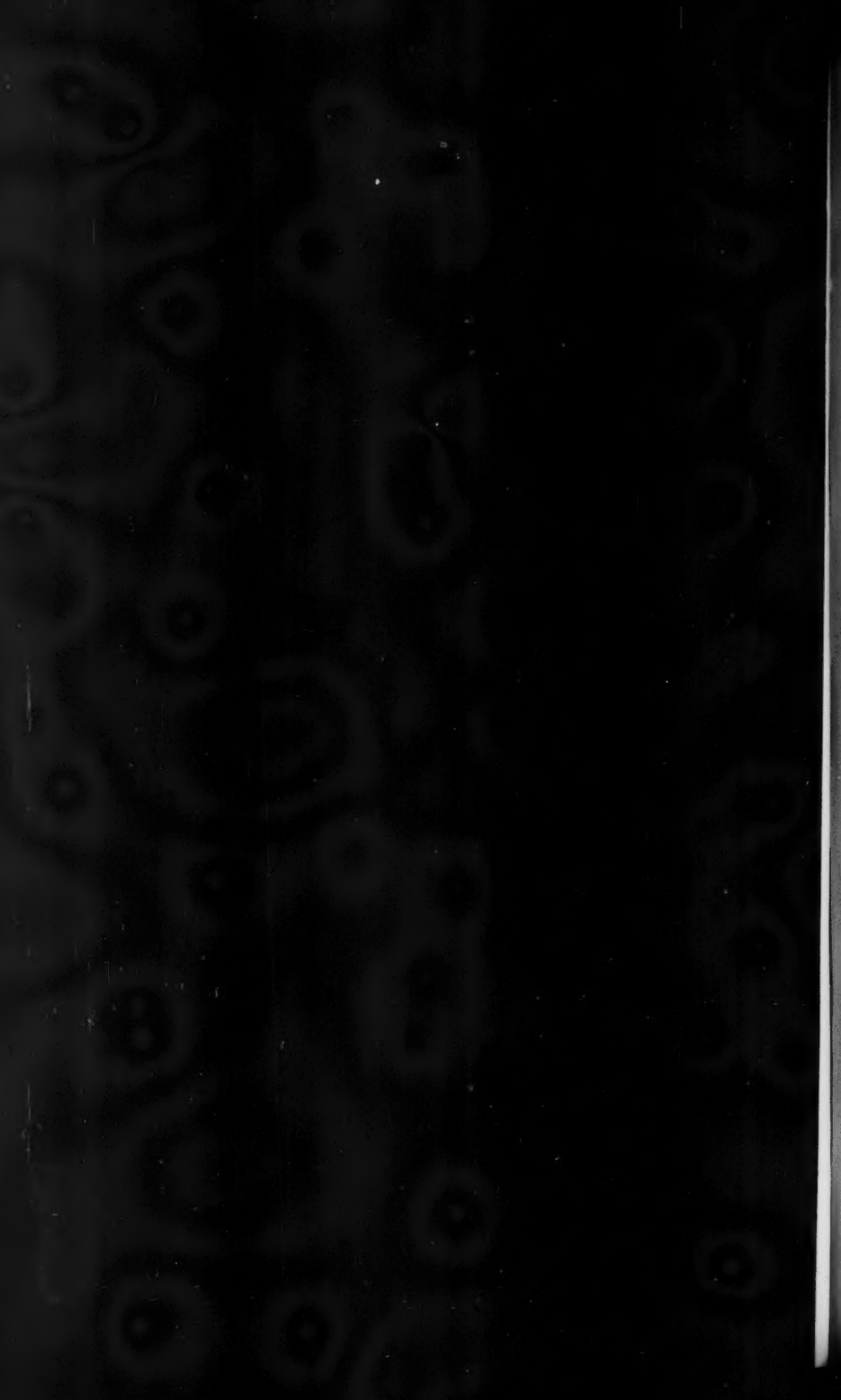
Table A V.

Cancer Deaths in Japan, Classified according to the Organs (1930).

(Figures in parentheses are the combined number of cancer and other malignant tumors.)

| | Both Sexes Number of Deaths | Males | | | Females | | |
|---|---|--------------------|--------------------------|-----------------------|--------------------|--------------------------|-----------------------|
| | | Total | 15-59 years of age | 60 years and up | Total | 15-59 years of age | 60 years and up |
| Buccal cavity 43 | 1,143 (1,207) | 825 (875) | 375 | 450 | 318 (332) | 142 | 176 |
| Oesophagus 44' | 2,577 | 1,844 | 724 | 1,120 | 693 | 251 | 442 |
| Stomach & Liver 44 | 26,997 (29,602) | 16,430 (18,311) | 7,882 | 8,547 | 10,567 (11,291) | 4,712 | 5,855 |
| Peritoneum, Intestine, Rec- tum 45 | 2,590 (2,723) | 1,240 (1,309) | 579 | 661 | 1,350 (1,414) | 642 | 710 |
| Female genital organs 46 | 7,106 (7,192) | — | — | — | 7,106 (7,192) | 5,179 | 1,927 |
| Breast 47 | 714 (716) | — | — | — | 714 (716) | 421 | 293 |
| Skin 48 | 221 (261) | 126 (152) | 49 | 77 | 95 (109) | 31 | 64 |
| Other organs 49 | 2,228 (3,201) | 1,328 (1,898) | 581 | 747 | 900 (1,303) | 447 | 453 |
| Total | 43,536 (44,902) | 21,793 (22,545) | 10,190 | 11,602 | 21,743 (22,357) | 11,823 | 9,920 |

The above table is based on the classification adopted by the Bureau of Census, and it is not possible to go into finer classifications of individual organs. The striking frequency of cancer of the gastro-intestinal system in Japan is shared both by male and female. In the male, gastric and hepatic cancers comprise more than two-thirds of the total cancers, and if cancers of oeso-



phagus, intestine, rectum, mouth cavity, etc., are added, cancers of the digestive system make up the most part of the total cancers in the male.

In the female, cancers of uterus, ovary and mamma combined fall far short of reaching the number of gastric and hepatic cancers. The fact that mammary cancers are in small number, contrary to the fairly large number of uterine cancers has attracted the attention of previous authors. According to the table given above, the number of uterine cancers is 7,106, corresponding to about one-third the total cancers in female, which is 21,743. The number of mammary cancers is only 714, only about one-tenth of the uterine cancers. As we shall explain later in this paper, the quoted number of mammary gland cancers seems to be less than the actual number, but it seems to be indisputable that the mammary cancer is comparatively less frequent in Japan than in America and European countries. Several years ago, in response to the inquiry made by Professor Wells, I stated that the number of mammary cancers is not very small, based on statistics collected from surgical clinics. After having collected more data from widely different sources and carefully correlated the available figures, I have come to believe that the relative infrequency of mammary cancer in Japan is really true. I shall discuss this subject further after considering certain other statistics.

A striking fact that emerges from the above table requires a comment. That is the fact that with the exception of cancer of the reproductive organs and of mammary glands, the actual number of cancers in the female is greater after the age of sixty than before that age. Everybody is familiar with the fact that cancer is a disease of advanced age, but it must be remembered that persons surviving after the age of sixty are not very numerous, and surely the population of sexogenarians and older persons cannot be large. In spite of this we find that cancers after the age of sixty are in a larger number than the total of all cancers below

that age. Certain allowance must be made for the above data which are not statistics of clinical diagnosis but are based on diagnosis at the time of death, and thus may be expected to include a larger proportion of cancer deaths of comparatively more advanced years, but even then the number of cancers after the age of sixty is unexpectedly large. This marked frequency in advanced years is most conspicuous in the case of oesophageal cancer, which, in the male, amounts to 724 before and 1,120 after the age of sixty, the rates being 1.0 to over 1.5. In the female the number of cancers is 251 before and 442 after sixty years of age with the ratio of 1.0 to more than 1.7. Among cancers of internal organs, oesophageal cancer occurs most frequently in old persons, as I shall prove in Part III of this paper, based on statistics of autopsy cases.

It is a striking fact that cancers developing more frequently before the age of sixty than after are limited to those of the female sex. The cancers of female reproductive organs amount to 5,179 before sixty years of age, and 1,927 after that age, with the approximate ratio of 2.7 to 1.0. This phenomenon is explainable by the fact that uterine cancer is more frequent during the forties, especially during the menopause period, in parous females. The number of mammary cancers before and after the age of sixty are 421 and 293 respectively, the approximate ratio being 1.5 to 1.0. It is not easy to obtain a satisfactory explanation of this phenomenon. It would be interesting to see if the occurrence of mammary cancer is also different according to the two age groups in a country like England where mammary cancer is especially numerous.

2. COMPARISON WITH AMERICA AND EUROPEAN COUNTRIES.

Since the International Health Year-Book contains no reference to the classification of cancer statistics according to the organs, it is necessary to look for other sources of information. The British Ministry of Health has paid especial attention to cancer, and has

compiled very detailed statistics. Valuable comments and statistics are found in the "Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1931" (London, 1932).

In Table A VI a comparison is made between Japan and *England and Wales* of cancer statistics classified according to the organs.

Table A VI.

Comparison of Japanese and English Cancer Statistics
for 1930, Classified according to the Organs.

| Organs | Males | | | | Females | | | |
|-------------------------------------|--------|---------|-----------------|---------|---------|---------|-----------------|---------|
| | Japan | | England & Wales | | Japan | | England & Wales | |
| | Number | % | Number | % | Number | % | Number | % |
| Buccal Cavity 43 | 825 | (38) | 2,601 | (106) | 318 | (15) | 425 | (15) |
| Stomach & Liver 44 | 16,430 | (754) | 7,965 | (298) | 10,507 | (483) | 7,367 | (238) |
| Oesophagus 44 | 1,844 | (85) | 1,669 | (62) | 693 | (32) | 591 | (19) |
| Intestine, Rectum, Peritoneum 45 | 1,240 | (57) | 6,618 | (245) | 1,350 | (62) | 6,595 | (212) |
| Female Genital organs 46 | — | — | — | — | 7,106 | (327) | 5,999 | (194) |
| Breast 47 | — | — | 60 | (2) | 714 | (33) | 6,052 | (195) |
| Skin & Penis 48 | 126 | (6) | 849 | (31) | 93 | (5) | 447 | (14) |
| Other organs 49 | 1,328 | (61) | 7,154 | (265) | 980 | (45) | 3,491 | (116) |
| Total | 21,793 | (1,000) | 26,916 | (1,000) | 21,743 | (1,000) | 30,967 | (1,000) |

An inspection of the above table shows that in Japan cancer deaths are distributed equally between males and females, while in England and Wales about 4000 more females die of cancer than males. The main cause of this discrepancy is the prevalence of mammary cancer in England and Wales.

In the male, oesophagus cancer shows little difference though

it is slightly more frequent in Japan than in England and Wales. Gastric and hepatic cancer comprise more than two-thirds of the total cancers in Japan, and are more than twice as frequent as in England and Wales. In all other organs, cancer is more frequent in England and Wales than in Japan, especially those listed under the classification Nos. 43, 45, 48, 49, etc.

In the female, also, cancers of gastro-intestinal system are most frequent in Japan, and gastric and hepatic cancers far exceed in number the combined cancers of uterus, ovary, and other parts of the reproductive system. Uterine cancer is slightly more frequent in Japan than in England and Wales, but when it comes to mammary cancer the Japanese figure is only 714, i. e., about one-tenth the number of uterine cancers, while in England and Wales the number amounts to 6,052, exceeding the number of uterine cancers. England and Wales have been known for high incidence of mammary cancer, and this, together with the exceptionally low incidence in Japan, forms an interesting subject for further inquiry. The difference in the English and Japanese incidences of mammary cancer is more than ever strikingly brought out in the above table. So overwhelming a difference as this can scarcely be explained away as being due to racial difference or to relative diagnostic accuracy, and makes one suspect that there must be some definite cause to account for it.

It is also to be noted that intestinal, peritoneal, and rectal cancers (45) are considerably more frequent in England and Wales than in Japan.

In Table A VI, English figures under the classification Nos. 43, 45, 47, 48, 49, etc., are considerably greater than the Japanese figures. The details of these points are contained in the Annual Report previously mentioned, and I tabulate these data in the following table (Table A VII).

Outside of the problems we have already discussed, the points that are especially noteworthy in the above table are: (1) the

prevalence of tongue and other buccal cancers, (2) the fact that the total number of intestinal and rectal cancers exceeds that of gastric cancer, and (3) the fact that the prostate cancer is almost as frequent as oesophageal cancer. These points are markedly different from the state of affairs in Japan. Cancer of bladder and of skin seem to be more frequent in England and Wales than in Japan, in males as well as in females.

The Report of the British Ministry of Health includes a table showing the fluctuation of cancer deaths, classified according to the organs, during the period of from 1901 to 1930. According to this table, cancer of lung and of prostate gland showed a marked increase during this period. Lung cancer increased from 10.2 to 40.2 in the term of annual deaths per 1,000,000 population in the male, and in the female the increase was from 7.0 to 13.9, amounting to almost twice the number. The recent increase of lung cancer is attracting the general attention. Prostate cancer increased from 11.8 to 54.9, the increase amounting to almost five times, showing the highest rate of increase of all forms of cancers. This increase, however, is said to be due to improvement in surgical treatment and in microscopical examination, which enable the diagnosis of cancer of so much of the material previously considered simply as enlargement of the prostate gland. Increase in cancer is also seen in intestine, pancreas, ovary, etc. Total carcinomata for the male, including all the organs, increased from the average number of 784 for 1901-1910 to 1,031 for 1931. In the female, increase during the same period was only from 942 to 987, a very slight increase.

A somewhat notable decrease occurred in liver and peritoneal cancers, both in male and female. This decrease is probably due to the improvement in diagnosis, through which metastases in the liver and peritoneum have been eliminated from the number for these organs, being counted among the gastric, intestinal, ovarian, or other primary cancers.

The United States of America : — Two tables composing Table

Table
England and
The proportional frequencies of all sites of cancer expressed

| Inter- national Group No. | Males | | |
|---------------------------------|--------------------------------------|--------|-------------------------------------|
| | Sites | Deaths | Propor- tional rate per 1,000 |
| 43 | Lip.. .. . | 286 | (11) |
| | Tongue | 1,095 | (41) |
| | Mouth and Tonsil | 782 | (29) |
| | Jaw | 438 | (16) |
| 44 | Pharynx | 312 | (12) |
| | Oesophagus | 1,669 | (62) |
| | Stomach | 6,156 | (230) |
| | Liver and Gall-bladder | 1,497 | (56) |
| 45 | Mesentery and Peritoneum | 119 | (4) |
| | Intestine | 3,583 | (133) |
| | Rectum and Anus | 2,916 | (108) |
| 47 | Breast | 60 | (2) |
| 48 | Penis | 162 | (6) |
| | Scrotum | 60 | (2) |
| | Other Skin | 627 | (23) |
| 49 | Larynx | 852 | (32) |
| | Lung and Pleura | 1,050 | (39) |
| | Pancreas | 770 | (29) |
| | Kidney and Suprarenals | 315 | (12) |
| | Bladder.. .. . | 833 | (31) |
| | Prostate | 1,434 | (53) |
| | Testicle.. .. . | 143 | (5) |
| | Brain and Meninges | 90 | (3) |
| | Bones (Jaw excepted) | 400 | (15) |
| | Other specified organs | 792 | (29) |
| | Abdominal cavity (organ unspecified) | 94 | (3) |
| | Other and undefined | 375 | (14) |
| Total | | 26,916 | (1,000) |

A VII.

Wales, 1930.

as rates per thousand of all deaths from cancer.

| Inter- national Group No. | Females | | |
|---------------------------------|--------------------------------------|--------|--------------------------------|
| | Sites | Deaths | Proportional rate per 1,000 |
| 43 | Lip.. .. . | 23 | (1) |
| | Tongue | 115 | (4) |
| | Mouth and Tonsil | 119 | (4) |
| | Jaw | 168 | (5) |
| 44 | Pharynx | 94 | (3) |
| | Oesophagus | 591 | (19) |
| | Stomach | 5,241 | (169) |
| | Liver and Gall-bladder | 2,032 | (66) |
| 45 | Mesentery and Peritoneum | 199 | (6) |
| | Intestine | 4,493 | (145) |
| | Rectum and Anus | 1,903 | (61) |
| 46 | Ovary and Fallopian Tube | 1,253 | (40) |
| | Uterus | 4,354 | (141) |
| | Vagina and Vulva | 392 | (13) |
| 47 | Breast | 6,052 | (195) |
| 48 | Skin | 447 | (14) |
| 49 | Larynx | 265 | (9) |
| | Lung and Pleura | 433 | (14) |
| | Pancreas | 771 | (25) |
| | Kidney and Suprarenals | 238 | (8) |
| | Bladder | 376 | (12) |
| | Brain and Meninges | 70 | (2) |
| | Bones (Jaw excepted) | 326 | (11) |
| | Other specified organs | 600 | (19) |
| | Abdominal cavity (organ unspecified) | 205 | (7) |
| | Other and undefined | 207 | (7) |
| Total | | 30,967 | (1,000) |

A VIII and Table A IX are compiled from data selected from F. L. Hoffman's San Francisco Cancer Survey, 3rd to 6th Reports, inclusive. One of these (A VIII) represents the grand total of the actual number for 1922 and 1924 for five great cities of the United States, namely, San Francisco, Albany, New Orleans, Boston and Chicago. The other (A IX) stands for the complete survey of San Francisco for the nine years extending from 1919 to 1929. The former table is arranged according to the order of international classification, and in the latter table its items are placed in the order of the magnitude of figures. A general idea of the cancer deaths in great American cities, classified according to the organs may be obtained by examining these tables. The general conditions as revealed in these tables more closely resemble those of England and Wales, and differ considerably from the state of affairs in Japan.

In the male, cancer of the mouth cavity, tongue, bladder, peritoneum, rectum, etc., are comparatively more frequent in America than in Japan. Especially prostate cancer ranks at the fifth place in both of the tables. Mammary cancer is slightly less than uterine cancer in both tables, and while the mammary cancer is less frequent than in England and Wales, it is incomparably more frequent than in Japan.

Germany:—Several detailed statistics for Bavaria conducted by Das Bayerische Landesverband zur Erforschung und Bekämpfung der Krebskrankheit have been published in the Zeitschrift für Krebsforschung, and it has been possible to obtain a fair idea as to the cancer ratio in Germany, based on vital statistics. Table A VIII is compiled from data selected from the 4th report of the above series, namely "Krebstatistik 1926 in Bayern" by Karl Wackerbauer, published in Zeitschrift für Krebsforschung, XXXVI, 1932.

Wackerbauer separates urban and country districts, and deviates from the usual organ classification by adopting the separation into skin, mucous membrane, respiratory organs, female reproductive organs, glands and miscellaneous. This method of treatment is

CANCER DEATHS IN THE U. S. A., CLASSIFIED
ACCORDING TO THE ORGANS.

(Extracted from Hoffman's reports).

Table A VIII.

Five Great Cities.

(San Francisco, Albany, New Orleans, Boston & Chicago)*

| International Group No. | Sites | Males | Females |
|----------------------------|-----------------------------------|-------|---------|
| 43 | Lip | 47 | 5 |
| | Tongue | 224 | 21 |
| | Mouth and Tonsil | 45 | 15 |
| | Jaw | 143 | 24 |
| | Total Buccal Cavity | 462 | 65 |
| 44-45 | Pharynx & Oesophagus | 518 | 100 |
| | Stomach | 1,819 | 1,183 |
| | Liver, Gall-bladder | 532 | 669 |
| | Mesentery, Peritoneum | 653 | 931 |
| | Rectum | 353 | 317 |
| | Total Gastro-Intestinal System | 3,875 | 3,201 |
| 46 | Ovaries | — | 213 |
| | Uterus | — | 1,578 |
| | Vagina & Vulva | — | 73 |
| | Total Female Genital Organs | — | 1,864 |
| 47 | Breast | — | 1,243 |
| 48 | Skin | 67 | 33 |
| 49 | Prostate | 414 | — |
| | Larynx | 193 | 23 |
| | Lung & Pleura | 212 | 156 |
| | Pancreas | 194 | 153 |

* Chicago figures are for 1924; all other figures are for 1922.

| | | Males | Females |
|--|-----------------|--------|---------|
| | Bladder | 342 | 160 |
| | All other Sites | 755 | 599 |
| | Total | 2, 110 | 1, 091 |
| | Total | 6, 514 | 7, 496 |

Table A IX.
San Francisco (1919-1927)

| | Males | | Females | |
|----|---------------------|--------|---------------------|-----|
| 1 | Stomach | 1, 004 | Uterus | 631 |
| 2 | Intestine | 307 | Breast | 532 |
| 3 | Liver, Gall-bladder | 287 | Stomach | 456 |
| 4 | Rectum | 222 | Intestine | 337 |
| 5 | Prostate | 218 | Liver, Gall-bladder | 232 |
| 6 | Oesophagus | 200 | Rectum | 141 |
| 7 | Lung | 131 | Ovaries | 87 |
| 8 | Tongue | 123 | Lung | 85 |
| 9 | Bladder | 113 | Pancreas | 74 |
| 10 | Pancreas | 110 | Bones | 59 |
| 11 | Neck | 102 | General | 50 |
| 12 | Larynx | 98 | Bladder | 43 |
| 13 | Bones | 77 | Peritoneum | 27 |
| 14 | Jaw | 71 | Oesophagus | 25 |
| 15 | General | 50 | Face | 20 |
| 16 | Kidney | 39 | Neck | 19 |
| 17 | Lip | 34 | Vulva, Vagina | 18 |
| 18 | Male genitals | 29 | Kidney | 18 |

| Males | | | Females | |
|-------|------------|-------|-------------|-------|
| 19 | Pharynx | 26 | Abdomen | 16 |
| 20 | Peritoneum | 26 | Brain | 15 |
| 21 | Throat | 26 | Tongue | 11 |
| 22 | Face | 22 | Larynx | 9 |
| 23 | Tonsil | 20 | Thyroid | 8 |
| 24 | Other Skin | 18 | Jaw | 6 |
| 25 | Brain | 16 | Ear | 6 |
| 26 | Cheek | 11 | Throat | 5 |
| 27 | Mouth | 11 | Nose | 5 |
| 28 | Ear | 10 | Axilla | 5 |
| 29 | Abdomen | 10 | Cheek | 4 |
| 30 | Eye | 9 | Head | 4 |
| 31 | Nose | 9 | Other Skin | 4 |
| 32 | Parotid | 8 | Eye | 4 |
| 33 | Thyroid | 6 | Lymph gland | 4 |
| | Total | 3,462 | | 2,977 |

Table A X.

Cancer Deaths in Bavaria (1926) Classified according to Tissues
and Organs. (Extracted from Wackerbauer's report)

| Males | | | | | Females | | | |
|-------|-------|--------|-----------------|-------|---------|--------|-----------------|-------|
| | Sites | Cities | Rural districts | Total | Sites | Cities | Rural districts | Total |
| Skin | Lip | 1 | 8 | 9 | | 1 | 5 | 6 |
| | Face | 11 | 39 | 50 | | 14 | 39 | 53 |
| | Head | 1 | 5 | 6 | | 2 | 3 | 5 |
| | Body | 13 | 31 | 44 | | 16 | 24 | 40 |

| Males | | | | | Females | | | |
|--------------------|-----------------|--------|-----------------|-------|---------|--------|-----------------|-------|
| | Sites | Cities | Rural districts | Total | Sites | Cities | Rural districts | Total |
| | Anus | 1 | — | 1 | | 2 | — | 2 |
| | Penis | 4 | 2 | 6 | Vulva | 3 | 1 | 4 |
| Mucous Membrane | Upper jaw | 10 | 10 | 20 | | 7 | 2 | 9 |
| | Lower jaw | 5 | 4 | 9 | | 5 | 2 | 7 |
| | Pharynx | 3 | 3 | 6 | | — | 3 | 3 |
| | Tongue | 5 | 13 | 18 | | 6 | 3 | 9 |
| | Oesophagus | 74 | 72 | 146 | | 25 | 26 | 51 |
| | Stomach | 761 | 1,699 | 2,460 | | 741 | 1,360 | 2,101 |
| | Intestine | 126 | 169 | 295 | | 119 | 203 | 322 |
| | Rectum | 216 | 154 | 370 | | 132 | 89 | 221 |
| | Urinary bladder | 45 | 96 | 141 | | 30 | 30 | 60 |
| | Gall-bladder | 21 | 6 | 27 | | 33 | 24 | 57 |
| Respiratory Organs | Lung | 15 | 15 | 30 | | 13 | 11 | 24 |
| | Bronchi | 3 | — | 3 | | 2 | 1 | 3 |
| | Larynx | 30 | 27 | 57 | | 10 | 20 | 30 |
| | | | | | Vagina | 16 | 9 | 25 |
| | | | | | Abdomen | 71 | 88 | 159 |
| | | | | | Uterus | 411 | 329 | 740 |
| Glands | Thyroid | 7 | 3 | 10 | | 16 | 13 | 29 |
| | Parotid | 2 | 4 | 6 | | 2 | 6 | 8 |
| | Liver | 143 | 165 | 308 | | 149 | 244 | 393 |
| | Kidney | 13 | 12 | 25 | | 9 | 11 | 20 |
| | Pancreas | 14 | 15 | 29 | | 9 | 14 | 23 |
| | Prostate | 28 | 29 | 57 | Ovaries | 43 | 25 | 68 |
| | Testicle | — | 3 | 3 | Breast | 191 | 255 | 446 |

| Males | | | | | Females | | | |
|-------|-------------|--------|-----------------|-------|---------|--------|-----------------|-------|
| | Sites | Cities | Rural districts | Total | Sites | Cities | Rural districts | Total |
| | Peritoneum | 7 | 5 | 12 | | 29 | 14 | 43 |
| | Pleura | — | 1 | 1 | | 2 | 4 | 6 |
| | Mediastinum | 1 | 1 | 2 | | 1 | 2 | 3 |
| | Unstated | 30 | 24 | 54 | | 32 | 42 | 74 |
| | Generalized | 6 | 7 | 13 | | 11 | 12 | 23 |
| Total | | 1,596 | 2,622 | 4,218 | | 2,153 | 2,914 | 5,067 |

convenient for finding the cancer rate for individual organs. A comparison of this table with Japanese statistics brings out the following noteworthy points: The striking abundance of gastric cancer is the same in Bavaria and in Japan, but in the former gastric cancer in the female is nearly as frequent as in the male. Gastric cancer in the female in Bavaria is several times more frequent than mammary and uterine cancers, showing how prevalent the gastric cancer is in the female population in that country. Oesophageal cancer in the female amounts to more than one-third the number in the male, and is in considerably higher number than in Japan, and while the prevalence of gall-bladder cancer in the female may not be worth special attention, it is decidedly noteworthy that cancers of tongue, intestine, rectum and other parts of the digestive system are comparatively very frequent in the female.

Prostate cancer is not as important as in England and Wales or in the United States of America, and yet is considerably more frequent than in Japan. Cancers of the respiratory organs are markedly less than those of the digestive system, and seem to be less frequent in Bavaria than in Japan and other countries. The total number of skin cancers is not great, but the relatively more frequent cancer of the face, and less frequent cancer of the penis are in agreement with English and American statistics, and differ from the condition in Japan. Cancer of penis seems very frequent in China and Korea.

APPENDIX.

STATISTICS OF LIFE INSURANCE COMPANIES.

A statistical table was presented to the special committee for anti-tuberculosis work at the Department of Home Affairs in March, 1933, by Mr. Tsuneta Yano, member of the committee. This table included the number of deaths, classified according to the diseases, among those insured by the major life insurance companies in Japan. The causes of death, arranged in the order of statistical importance, were: 1st, pulmonary tuberculosis, 2nd, cerebral haemorrhage, 3rd, cancer, and 4th down were pneumonia, nephritis, heart diseases, respiratory diseases, suicide, external injury, childbirth, etc. Excluding congenital and infant disease from con-

Table A XI.

Table showing Number of Deaths from Major Diseases
(per 10,000 insured persons).

The usual life insurance.

| | Japan | | America | |
|------------------------|-------|-------|---------|-------|
| | 1924 | 1931 | 1924 | 1931 |
| Pulmonary tuberculosis | 177.0 | 193.4 | 57.4 | 41.3 |
| Pneumonia | 62.8 | 85.7 | 53.6 | 48.7 |
| Respiratory diseases | 22.8 | 26.9 | 7.2 | 7.5 |
| Cancer | 77.2 | 86.6 | 68.3 | 79.5 |
| Cerebral haemorrhage | 143.2 | 147.8 | 56.1 | 52.5 |
| Heart diseases | 60.6 | 61.5 | 105.1 | 128.7 |
| Nephritis | 94.3 | 76.2 | 53.4 | 43.4 |
| Childbirth | 13.8 | 9.6 | 5.0 | 5.0 |
| Suicide | 19.3 | 26.1 | 19.8 | 33.6 |
| External injury | 77.6 | 27.7 | 42.0 | 41.6 |

sideration, we see that these statistics agree well with those of the Government Bureau of Census in placing cerebral haemorrhage and pulmonary tuberculosis in the highest ranks. It is noteworthy that pulmonary tuberculosis always takes the first rank in the statistics of life insurance companies. In America, statistics of life insurance companies placed pulmonary tuberculosis in the 3rd place in 1924, but in 1931 it had fallen to the 7th place. Cancer, on the contrary, has greatly increased in recent years, rising to the 2nd place next to heart disease. These points agree well with the statistics of the United States as a whole.

Part II.

Statistical Observations based on Diagnosed Material from Various Clinical Departments.

CHAPTER I.

NATURE OF MATERIAL.

The present part of this study is based on statistics supplied to me by various clinical departments of universities and of larger hospitals. With the idea that statistics based on clinical material with presumably accurate diagnosis may be of value for the proper understanding of the cancer statistics classified according to the organs, especially when judiciously compared with other data from vital statistics and with statistics based on autopsy records, I have been requesting, since 1929, heads of clinical departments of universities and medical colleges and chiefs and directors of various hospitals to supply me with such statistical data as I specified in the blank form to be filled in which I sent with the request. Much to my satisfaction a large number of competent authorities responded to my request and supplied me with numerous valuable data. These data, either as received or grouped according to the clinical department, were published in Gann, vol. 24, (1930) Nos. 3 and 4; vol. 25 (1931), Nos. 1, 2, and 4; vol. 26 (1932), Nos. 1, 3, und 4.

The entire data assembled come from the following 51 sources: 2 general hospitals, 19 university clinics of internal medicine, 12 surgical clinics, 2 gynecological departments, 5 oto-laryngological departments, 5 departments of dermatology and urology, 1 hospital specializing in internal medicine, 3 hospitals for gastro-intestinal diseases, and the Clinical Department of the Japanese Society of Cancer Research.

In addition to the above 51 places in Japan proper, 27 provincial hospitals and various clinical departments of Keijo Imperial University and of Keijo Medical College supplied data for Korea,

and for China 4 hospitals under the auspices of The Dojin Kai donated their statistics. It is fortunate to be able to know something of the relative frequency of cancer in various organs in Korea and in China, and to make comparison with the situation in Japan.

Before proceeding to the various interesting observations based on the data, I wish to express my deep gratitude to all the persons who were responsible in collecting and compiling the original data. Without their earnest cooperation this part of my task would have been impossible.

I shall first present the entire data according to the following order: General hospital, internal, surgical, gynecological, oto-laryngological, uro-dermatological, ophthalmological, and dental clinics, hospitals for gastro-intestinal diseases, and clinical department of the Japanese Society of Cancer Research, making statistical observations on each separately. I shall then consider the whole situation by statistically treating the entire data together.

CHAPTER II.

COMPILATION OF DATA.

1. GENERAL HOSPITALS.

The data to be considered here came from the Red Cross Hospital and Juntendo Hospital, both of Tokyo. The combined number of total patients and of cancer patients reported by these two hospitals were as follows:

| | All patients | Cancer | Ratio |
|---------|--------------|--------|-------|
| Males | 12,206 | 417 | 3.42 |
| Females | 10,227 | 486 | 4.74 |
| Total | 22,433 | 903 | 4.02 |

Table B I gives the details classified according to the organs.

Table B I.

General Hospitals.

Red-Cross Hospital, Tokyo. Juntendo Hospital, Tokyo.

| | Both Sexes | | | Males | | | Females | | |
|----|------------|-------|---------|------------|-------|---------|---------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 379 | (41.24) | Stomach | 254 | (59.21) | Uterus | 187 | (38.17) |
| 2 | Uterus | 187 | (20.34) | Rectum | 26 | (6.06) | Stomach | 125 | (25.51) |
| 3 | Breast | 96 | (10.44) | Oesophagus | 26 | (6.06) | Breast | 95 | (19.40) |
| 4 | Rectum | 45 | (4.89) | Upper jaw | 20 | (4.66) | Rectum | 19 | (3.88) |
| 5 | Oesophagus | 28 | (3.04) | Liver | 15 | (3.49) | Thyroid gland | 9 | (1.84) |
| 6 | Upper jaw | 25 | (2.73) | Tongue | 14 | (3.24) | Liver | 8 | (1.61) |
| 7 | Liver | 23 | (2.50) | Skin | 11 | (2.56) | Tongue | 6 | (1.22) |
| 8 | Tongue | 20 | (2.18) | Penis | 10 | (2.33) | Upper jaw | 5 | (1.02) |
| 9 | Skin | 14 | (1.52) | Larynx | 6 | (1.40) | Ovary | 4 | (0.82) |
| 10 | Penis | 10 | (1.07) | Lung | 6 | (1.40) | Lower jaw | 4 | (0.82) |

| | Both Sexes | | | Males | | | Females | | |
|--------------------|----------------|--------|--------|----------------|-------|--------|----------------|-------|--------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 11 | Thyroid gland | 10 | (1.07) | Mouth | 5 | (1.17) | Parotis | 3 | (0.61) |
| 12 | Larynx | 9 | (0.91) | Lower jaw | 5 | (1.17) | Skin | 3 | (0.61) |
| 13 | Lower jaw | 9 | (0.91) | Bladder | 4 | (0.93) | Mouth | 3 | (0.61) |
| 14 | Mouth | 8 | (0.87) | Lip | 3 | (0.70) | Larynx | 3 | (0.61) |
| 15 | Lung | 7 | (0.76) | Cervical gland | 2 | (0.46) | Bladder | 3 | (0.61) |
| 16 | Bladder | 7 | (0.76) | Intestine | 2 | (0.46) | Oesophagus | 2 | (0.41) |
| 17 | Ovary | 4 | (0.44) | Prostate | 1 | | Gall-bladder | 2 | (0.41) |
| 18 | Parotis | 3 | (0.31) | Gall-bladder | 1 | | Urethra | 2 | (0.41) |
| 19 | Cervical gland | 3 | (0.31) | Breast | 1 | | Lung | 1 | |
| 20 | Gall-bladder | 3 | (0.31) | Testicle | 1 | | Cervical gland | 1 | |
| 21 | Lip | 3 | (0.31) | Thyroid gland | 1 | | Peritoneum | 1 | |
| 22 | Intestine | 2 | (0.22) | Pharynx | 1 | | | | |
| 23 | Peritoneum | 2 | (0.22) | Ear | 1 | | | | |
| 24 | Urethra | 2 | (0.22) | Peritoneum | 1 | | | | |
| 25 | Prostate | 1 | | | | | | | |
| 26 | Testicle | 1 | | | | | | | |
| 27 | Pharynx | 1 | | | | | | | |
| 28 | Ear | 1 | | | | | | | |
| Total | | 903 | | 417 | | | 486 | | |
| Number of patients | | 22,433 | | 12,206 | | | 10,227 | | |

Noteworthy points in Table B I may be recapitulated as follows:

Gastric cancer takes the first rank in the total cancers as well as in cancers in the male. It consists of about 60% of all cancers in the male. In the female, however, gastric cancer follows uterine

cancer as to frequency and constitutes about one-fourth of the total cancers in the female.

Uterine cancer ranks first in the female, constituting more than 38% of all cancers in the female. Taking both male and female, uterine cancer ranks second, next only to gastric cancer.

Mammary cancer is considerably less frequent than uterine cancer, and this is clearly shown in the vital statistics. This fact is attracting the attention of foreign investigators. According to the above table, however, the number of mammary cancers is not small, and in fact it amounts to about one-half the total cancers in the female, and ranks third among all the cancers in male and female combined.

Cancers other than gastric, uterine and mammary groups are few in number. In the order of frequency they involve the following organs: rectum, oesophagus, upper jaw, liver, tongue, skin, penis, thyroid gland, larynx, lower jaw, mouth cavity, lung, bladder, etc. This order changes somewhat when divided according to sex.

In the male, the second place is taken by rectum (following stomach which ranks first), and oesophagus, upper jaw, liver, tongue, skin, penis, larynx, lung, mouth cavity, lower jaw, and bladder follow in the order given.

In the female, rectum is in the fourth position, thyroid gland the fifth, and liver, tongue, upper jaw, ovary, lower jaw, etc., following in the order given.

The points which attract our attention here are (1) that there are only 2 cases of cancer of the intestine (excluding rectal cancer), and only a single prostate gland cancer in the male, (2) that oesophageal and pulmonary cancers are considerably less numerous in the female than in the male, and (3) that the two cases of urethral cancer and three cases of parotid cancer both occurred in the female only.

2. CLINICS OF INTERNAL MEDICINE.

Twenty clinics of internal medicine contributing material for this part of the study are as follows: Arima Clinic, Sapporo; Yamakawa Clinic, Sendai; Kumagai Clinic, Sendai; Tominaga Clinic, Niigata; Sawada Clinic, Niigata; Inada Clinic, Tokyo; Miura-Shimazono Clinic, Tokyo; Irisawa-Kure Clinic, Tokyo; Nishino Clinic, Tokyo; Shioya Clinic, Tokyo; Izumibashi Hospital, Tokyo; Miyagawa Clinic, Tokyo; Katsunuma Clinic, Nagoya; Saito Clinic, Kyoto; Osato Clinic, Kanazawa; Kakinuma Clinic, Okayama; Takeya Clinic, Fukuoka; Onodera Clinic, Fukuoka; Kaneko Clinic, Fukuoka; Kakuo Clinic, Nagasaki. Most of these are the clinical departments of the Medical Faculties of Imperial Universities and of Medical Colleges, and the data belong to the most reliable as to diagnosis.

The number of all patients, and of cancer patients included for observation are given below. The majority of these are hospitalized cases.

| | No. of all patients | No. of cancer patients | Ratio |
|---------|---------------------|------------------------|-------|
| Males | 67,727 | 4,012 | 5.9 |
| Females | 44,539 | 1,383 | 3.1 |
| Total | 112,266 | 5,395 | 4.8 |

Classified according to the organs, and arranged in the order of frequency, the above cancers may be tabulated as in Table B II:

The most conspicuous point revealed in this table is the marked frequency of cancer of the digestive system. Combined number of gastric, hepatic, oesophageal, rectal, and intestinal cancers amounts to more than 90% of all cancers in male, in female, as well as in male and female both. Cancer of stomach is the most frequent of these and constitutes about 68% of all cancers, and is greater in number than all other cancers put together. In males, in females, and in both male and female cancer of the liver ranks second as to frequency, and the third position is taken by oesophageal cancer. However, in the female, although oesophageal

Table B II.
Internal Medicine. 19 Clinics and 1 Hospital.

| | Both Sexes | | | Males | | | Females | | |
|----|--------------|-------|---------|--------------|-------|---------|---------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 3,673 | (68.10) | Stomach | 2,733 | (68.12) | Stomach | 940 | (67.97) |
| 2 | Liver | 716 | (13.27) | Liver | 556 | (13.86) | Liver | 160 | (11.57) |
| 3 | Oesophagus | 292 | (5.41) | Oesophagus | 243 | (6.06) | Oesophagus | 49 | (3.54) |
| 4 | Rectum | 171 | (3.17) | Lung | 132 | (3.29) | Rectum | 49 | (3.54) |
| 5 | Lung | 151 | (2.80) | Rectum | 122 | (3.04) | Peritoneum | 38 | (2.75) |
| 6 | Peritoneum | 79 | (1.46) | Intestine | 44 | (1.10) | Gall-bladder | 30 | (2.17) |
| 7 | Gall-bladder | 67 | (1.06) | Peritoneum | 41 | (1.02) | Intestine | 22 | (1.52) |
| 8 | Intestine | 66 | (1.04) | Gall-bladder | 37 | (0.92) | Uterus | 22 | (1.52) |
| 9 | Pancreas | 32 | (0.59) | Pancreas | 28 | (0.72) | Lung | 19 | (1.37) |
| 10 | Bile-duct | 26 | (0.48) | Bile-duct | 18 | (0.45) | Breast | 9 | (0.65) |
| 11 | Uterus | 22 | (0.41) | Mediastinum | 12 | (0.30) | Bile-duct | 8 | (0.57) |
| 12 | Mediastinum | 19 | (0.35) | Kidney | 11 | (0.27) | Ovary | 8 | (0.57) |
| 13 | Kidney | 15 | (0.28) | Larynx | 9 | (0.22) | Mediastinum | 7 | (0.51) |
| 14 | Breast | 9 | (0.17) | Mouth | 4 | (0.10) | Pancreas | 4 | (0.29) |
| 15 | Larynx | 9 | (0.17) | Tongue | 4 | (0.10) | Kidney | 4 | (0.29) |
| 16 | Ovary | 8 | (0.15) | Pleura | 4 | (0.10) | Mouth | 3 | (0.22) |
| 17 | Mouth | 7 | (0.13) | Pharynx | 3 | (0.07) | Upper jaw | 2 | (0.15) |
| 18 | Pleura | 5 | (0.09) | Penis | 2 | (0.05) | Skin | 2 | (0.15) |
| 19 | Pharynx | 4 | (0.07) | Prostate | 2 | (0.05) | Thyroid gland | 2 | (0.15) |
| 20 | Tongue | 4 | (0.07) | Testicle | 2 | (0.05) | Bladder | 2 | (0.15) |
| 21 | Bladder | 3 | (0.06) | Spleen | 2 | (0.05) | Pharynx | 1 | |
| 22 | Prostate | 2 | (0.04) | Bladder | 1 | | Pleura | 1 | |
| 23 | Testicle | 2 | (0.04) | Adrenal | 1 | | Spleen | 1 | |

| | Both Sexes | | | Males | | | Females | | |
|-----------------------|------------------|---------|--------|-----------------|-------|---|---------|-------|---|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 24 | Penis | 2 | (0.04) | Hypophy- sis | 1 | | | | |
| 25 | Upper jaw | 2 | (0.04) | Spleen | 2 | | | | |
| 26 | Skin | 2 | (0.04) | | | | | | |
| 27 | Thyroid gland | 2 | (0.04) | | | | | | |
| 28 | Adrenal | 1 | | | | | | | |
| 29 | Hypophy- sis | 1 | | | | | | | |
| 30 | Spleen | 3 | | | | | | | |
| Total | | 5,395 | | 4,012 | | | 1,383 | | |
| Number of patients | | 112,266 | | 67,727 | | | 44,539 | | |

cancer is in the third place, its actual number is 49 (ratio 3.54), which is less than one-third the number of liver cancer which ranks second and is about the same as rectal cancer which ranks fourth. This is considerably smaller than the number of oesophageal cancers in the male, which is 243 (ratio 6.06).

It is worthy of note that cancer of the liver ranks second, next to gastric cancer, both in male and in female. Some of these may in reality be metastatic tumors, not primary growths in the liver, but even then it is too obvious that hepatic cancer is very frequent in Japan. From the statistics based on autopsy records it has been well known that liver cancer is especially frequent in Japan and the Dutch Indies, and the present data on clinical diagnosis afford further proof insofar as Japan is concerned. The frequency of liver cancer is marked not only in Tokyo, Fukuoka, etc., but also in all parts of Japan, and this is evidenced by the fact that the figures from all of the clinical departments place liver cancer in the second rank, next to stomach cancer, with the only exception of the Niigata statistics in which it ranks third.

The fact that cancers of the rectum, intestine, gall bladder, etc., are fairly common is not remarkable, but the strikingly larger number of lung cancers in the male (132; 3.29%) than in the female (19; 1.37%) is an extraordinary phenomenon. Lung cancer ranks fourth in the male, and ninth in the female. The tendency for lung cancer to increase is noticeable in recent years in all the civilized countries in the world. I shall have occasion to discuss this question again later in this paper, but special attention should be called to the relatively large number of cases in which lung cancers have been noted in various clinics in Japan during the past several years.

Outside of the reproductive organs, the gall-bladder, bile-ducts and thyroid gland, and also peritoneum show a larger number of cancers in the female than in the male. It should be added, however, that clinically diagnosed peritoneal cancer, upon pathological examination, frequently turns out to be metastasis from a primary cancer in stomach, ovary, intestine, etc.

3. SURGICAL CLINICS.

The following surgical clinics of Imperial Universities and other schools contributed data to be considered here: — Nishikawa Clinic, Sapporo; Sugimura Clinic, Sendai; Surgical Clinic of the former Medical Academy of Chiba; Seo Clinic, Chiba; Aoyama Clinic, Tokyo; Otsuki Clinic, Tokyo; Torigata Clinic, Kyoto; Isobe Clinic, Kyoto; Iwanaga Clinic, Osaka; Surgical Clinic of Okayama Medical College; Goto Clinic, Fukuoka; Akaiwa Clinic, Fukuoka.

The total number of all patients and of cancer patients are as follows;

| | No. all patients | No. cancer patients | Ratio |
|---------|------------------|---------------------|-------|
| Males | 61,934 | 4,171 | 6.5 |
| Females | 31,077 | 2,330 | 7.4 |
| Total | 93,011 | 6,501 | 6.9 |

Table B III.
12 Surgical Clinics.

| | Both Sexes | | | Males | | | Females | | |
|----|---------------|-------|---------|----------------|-------|---------|---------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 3,203 | (49.27) | Stomach | 2,383 | (57.27) | Stomach | 814 | (33.94) |
| 2 | Breast | 763 | (11.74) | Rectum | 482 | (11.56) | Breast | 748 | (32.10) |
| 3 | Rectum | 731 | (11.24) | Tongue | 175 | (4.20) | Rectum | 249 | (10.69) |
| 4 | Upper jaw | 265 | (4.08) | Upper jaw | 173 | (4.15) | Upper jaw | 92 | (3.95) |
| 5 | Intestine | 241 | (3.71) | Intestine | 165 | (3.67) | Intestine | 76 | (3.26) |
| 6 | Tongue | 215 | (3.31) | Skin | 153 | (3.57) | Uterus | 47 | (2.02) |
| 7 | Skin | 199 | (3.06) | Oesophagus | 141 | (3.38) | Skin | 46 | (1.97) |
| 8 | Oesophagus | 171 | (2.63) | Mouth | 96 | (2.30) | Thyroid gland | 43 | (1.85) |
| 9 | Mouth | 117 | (1.80) | Penis | 79 | (1.89) | Tongue | 40 | (1.72) |
| 10 | Liver | 80 | (1.23) | Liver | 60 | (1.44) | Oesophagus | 30 | (1.29) |
| 11 | Penis | 79 | (1.22) | Pancreas | 34 | (0.82) | Mouth | 21 | (0.90) |
| 12 | Thyroid gland | 71 | (1.09) | Thyroid gland | 28 | (0.67) | Liver | 20 | (0.86) |
| 13 | Pancreas | 48 | (0.74) | Lip | 25 | (0.60) | Ovary | 14 | (0.60) |
| 14 | Uterus | 47 | (0.72) | Kidney | 19 | (0.46) | Pancreas | 14 | (0.60) |
| 15 | Lip | 31 | (0.48) | Bladder | 19 | (0.46) | Gall-bladder | 12 | (0.52) |
| 16 | Kidney | 29 | (0.45) | Branchiogen | 17 | (0.41) | Peritoneum | 11 | (0.47) |
| 17 | Gall-bladder | 26 | (0.40) | Testicle | 15 | (0.36) | Kidney | 10 | (0.43) |
| 18 | Bladder | 26 | (0.40) | Breast | 15 | (0.36) | Bladder | 7 | (0.30) |
| 19 | Branchiogen | 20 | (0.31) | Gall-bladder | 14 | (0.34) | Lip | 6 | (0.26) |
| 20 | Parotis | 19 | (0.29) | Parotis | 13 | (0.31) | Parotis | 6 | (0.26) |
| 21 | Peritoneum | 16 | (0.25) | Salivary gland | 13 | (0.31) | Bile-duct | 4 | (0.17) |
| 22 | Lung | 15 | (0.23) | Lung | 12 | (0.29) | Lung | 3 | (0.13) |
| 23 | Testicle | 15 | (0.23) | Bile-duct | 8 | (0.19) | Branchiogen | 3 | (0.13) |

| | Both Sexes | | | Males | | | Females | | |
|-----------------------|----------------|--------|--------|-----------------|-------|--------|-------------------|-------|--------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 24 | Ovary | 14 | (0.22) | Prostate | 7 | (0.17) | Urethra | 3 | (0.13) |
| 25 | Salivary gland | 14 | (0.22) | Larynx | 6 | (0.14) | Larynx | 2 | (0.09) |
| 26 | Bile-duct | 12 | (0.18) | Perito- neum | 5 | (0.12) | Lower jaw | 2 | (0.09) |
| 27 | Larynx | 8 | (0.12) | Lower jaw | 2 | (0.05) | Nose | 2 | (0.09) |
| 28 | Prostate | 7 | (0.11) | Scrotum | 2 | (0.05) | Salivary gland | 1 | (0.04) |
| 29 | Lower jaw | 4 | (0.06) | Retina | 2 | (0.05) | Anus | 1 | (0.04) |
| 30 | Urethra | 3 | (0.05) | Anus | 1 | (0.02) | Vulva | 1 | (0.04) |
| 31 | Nose | 2 | (0.03) | Navel | 1 | (0.02) | Vagina | 1 | (0.04) |
| 32 | Anus | 2 | (0.03) | | | | Pleura | 1 | (0.04) |
| 33 | Scrotum | 2 | (0.03) | | | | | | |
| 34 | Retina | 2 | (0.03) | | | | | | |
| 35 | Vagina | 1 | | | | | | | |
| 36 | Vulva | 1 | | | | | | | |
| 37 | Navel | 1 | | | | | | | |
| 38 | Pleura | 1 | | | | | | | |
| Total | | 6,501 | | 4,171 | | | 2,330 | | |
| Number of patients | | 93,011 | | 61,934 | | | 31,077 | | |

Gastric cancer. In both sexes cancer of stomach takes the first place among all cancers. In the male the number of gastric cancers is greater than all other cancers put together (57.27%), while in both sexes combined, gastric cancer makes up about 50% of all cancers. In the female the ratio of gastric cancer is far lower than in the male, and yet it ranks first as to frequency, amounting to about 34% of all cancers.

Mammary cancer. In both sexes combined mammary cancer ranks second with the total number of 763 (11.74%) and is thus

slightly above the rectal cancer (731 or 11.24%) which ranks third. It amounts to only about one-third the number of gastric cancers.

In the female alone, however, although mammary cancer takes second rank, the actual ratio is 30.1%, which is only slightly lower than the ratio for gastric cancer (33.9%), which ranks first. This means that a comparatively large proportion of mammary cancer cases apply for surgical operation. The comparative scarcity of uterine cancer in the above table is due to the fact that the majority of the patients with this disease are treated at gynecological clinics. It is noteworthy that there are as many as 15 mammary cancers in the male, constituting 1.97% of all mammary cancers. Six of these 15 cases were reported by the Sugimura Clinic at Sendai. The Goto Clinic at Fukuoka and the Surgical Clinic of Chiba Medical College each reported 3 cases.

Rectal cancer. Rectal cancer ranks second in the male, corresponding in number to about one-fifth of the gastric cancers. It ranks third in the female, as well as in both sexes combined. The rectum is the most frequent site of the entire intestinal tube for cancer development, and rectal cancer amounts to about three times in number of all other intestinal cancers put together. This ratio holds true also in data collected from the internal clinics.

Cancer of the upper jaw takes the fourth place in male, in female, and in both sexes combined. The actual number, however, amounts to only about 36% of rectal cancer, which ranks third.

Intestinal cancer is in the fifth rank in male, in female, and in both sexes combined, with about the same ratio for the three groups.

Among other important sites for the occurrence of cancer, tongue, skin, oesophagus, buccal cavity, lips, etc., show much higher figures for male than for female. The cancer ratios of pancreas, kidney, etc., are about the same for both sexes. Thyroid gland cancer is more frequent in female than in male; gall-bladder cancer occurs more often in female than in male also.

The scarcity of cancer of the prostate gland and of scrotum offers a marked contrast to the conditions prevailing in foreign countries.

Additional statistics based on surgical material reported by Abe, by Iizuka and by Suzuki are incorporated here for reference. These three surgical statistics agree in the main among themselves and seem to show no marked difference from our Table B III. Our own data, however, include a considerably large number of gastric cancers than the three other statistics, clearly indicating the recent increase of operation on gastric cancers, in other words, a progress in surgical treatment.

Table B IV. (1)

The Kondo Surgical Clinic, Tokyo Imperial University.
Iizuka (1907-1916)

| Both sexes % | | Males | Females |
|---------------|-------------|------------------|-------------------|
| Stomach | 166 (22.05) | Stomach 118 | Mammary gland 130 |
| Mammary gland | 131 (17.4) | Rectum 92 | Stomach 48 |
| Rectum | 117 (15.54) | Tongue 45 | Rectum 35 |
| Upper jaw | 59 (7.84) | Oesophagus 44 | Upper jaw 17 |
| Tongue | 54 (7.14) | Upper jaw 42 | Intestine 13 |
| Oesophagus | 53 (7.04) | Penis 23 | Tongue 9 |
| Intestine | 31 (4.12) | Skin 22 | Oesophagus 9 |
| Skin | 27 (3.59) | Intestine 18 | Uterus 6 |
| Penis | 23 (3.05) | Roof of mouth 11 | Liver 5 |
| Liver | 14 (1.86) | Liver 9 | Skin 5 |
| Roof of mouth | 11 (1.46) | Neck 8 | Gall-bladder 3 |
| Neck | 10 (1.33) | Pharynx 7 | Thyroid 2 |
| Pharynx | 8 (1.06) | Floor of mouth 7 | Ovary 2 |

| Both sexes % | | Males | | Females | |
|---------------------------|----------|------------------------------|---|----------------------------|---|
| Floor of mouth | 8 (1.06) | Tonsil | 7 | Urethra | 2 |
| Tonsil | 7 (0.93) | Lower jaw | 6 | Neck | 2 |
| Lower jaw | 7 (0.93) | Gall-bladder | 4 | | |
| Gall-bladder | 7 (0.93) | Lip | 2 | Pharynx, Floor of mouth | |
| Uterus | 9 (0.79) | | | Lower jaw, Lip | |
| Lip | 3 (0.39) | Mammary gland, Thyroid | | Pancreas each 1 | |
| Ovary | 2 (0.27) | Urinary bladder, Testicle | | | |
| Urethra | 2 (0.27) | Prostate each 1 | | | |
| Bladder, Testicle | | | | | |
| Pancreas, Prostate each 1 | | | | | |
| 753 | | 460 | | 293 | |

Iizuka: Statistical study on cancer (Kondo Surgical Clinic, Tokyo Imperial University) Gann, Vol. 10, 1928.

Table B IV. (2)

The Sato Surgical Clinic, Tokyo Imperial University.

Abe (1903-1909)

| Order | Organs | Both sexes | Males | Females |
|-------|---------------|------------|-------|---------|
| 1 | Mammary gland | 124 (18.5) | 2 | 122 |
| 2 | Stomach | 91 (13.6) | 66 | 25 |
| 3 | Rectum | 84 (12.5) | 61 | 23 |
| 4 | Upper jaw | 64 (9.5) | 41 | 23 |
| 5 | Tongue | 62 (9.2) | 51 | 11 |
| 6 | Oesophagus | 51 (7.6) | 47 | 4 |
| 7 | Skin | 34 (5.1) | 28 | 6 |
| 8 | Penis | 22 (3.2) | 22 | — |

| Order | Organs | Both sexes | Males | Females |
|-------|--------------------------|------------|-----------|---------|
| 9 | Roof of Mouth | 15 (2.2) | 13 | 2 |
| 10 | Lower jaw | 13 (1.9) | 10 | 3 |
| 11 | Gill cleft | 11 (1.6) | 9 | 2 |
| 12 | Jejunum | 9 (1.3) | 8 | 1 |
| 13 | Sigmoid flexure | 8 (1.2) | 3 | 5 |
| 14 | Pharynx | 8 (1.2) | 7 | 1 |
| 15 | Submaxillary gland | 6 (0.8) | 5 | 1 |
| 16 | Bile-duct | 6 (0.8) | 3 | 3 |
| 17 | Mucous membrane of cheek | 5 (0.7) | 5 | 0 |
| 18 | Floor of mouth | 5 (0.7) | 5 | 0 |
| 19 | Lip | 3 (0.4) | 2 | 1 |
| 20 | Gums | 3 (0.4) | 3 | 0 |
| 21 | Kidney | 3 (0.4) | 1 | 2 |
| 22 | Urinary bladder | 3 (0.4) | 3 | 0 |
| 23 | Pancreas | 3 (0.4) | 2 | 1 |
| 24 | Tonsil | 2 (0.2) | 2 | 0 |
| 25 | Testicle | 2 (0.2) | 2 | 0 |
| 26 | Liver | 2 (0.2) | 1 | 1 |
| 27 | Prostate | 1 | 1 | — |
| 28 | Thyroid | 1 | — | 1 |
| 29 | Metastases | 25 | | |
| | | 668 | 425 | 243 |
| | | | 1.7 : 1.0 | |

Abe: Clinical Statistics of Cancer (Sato Surgical Clinic, Tokyo Imp. Univ.) Gann, Vol. 1, 1908.

Table B IV. (3)
Surgical Clinics, Kyoto Imperial University.
Suzuki (1901-1916)

| Both sexes | | Males | | Females | |
|-----------------|-----|-----------------|-----|-------------------|-----|
| Stomach | 422 | Stomach | 328 | Mammary gland | 154 |
| Rectum | 169 | Rectum | 108 | Stomach | 94 |
| Mammary gland | 158 | Tongue | 49 | Rectum | 61 |
| Tongue | 55 | Mouth cavity | 39 | Upper jaw | 9 |
| Mouth cavity | 44 | Intestine | 33 | Tongue | 6 |
| Upper jaw | 29 | Upper jaw | 30 | Mouth cavity | 5 |
| Intestine | 36 | Penis | 29 | Uterus | 4 |
| Penis | 29 | Skin | 26 | Neck | 4 |
| Skin | 29 | Oesophagus | 23 | Pancreas | 4 |
| Oesophagus | 24 | Liver | 11 | Intestine | 3 |
| Neck | 12 | Larynx | 8 | Gall-bladder | 2 |
| Liver | 12 | Pancreas | 8 | Lip | 2 |
| Pancreas | 12 | Neck | 8 | Bladder, Kidney | 2 |
| Larynx | 9 | Pharynx | 5 | Skin | 2 |
| B'adder, Kidney | 6 | Testicle | 5 | External genitals | 2 |
| Lower jaw | 5 | Mammary gland | 4 | Thyroid | 1 |
| Pharynx | 5 | Prostate | 4 | Lower jaw | 1 |
| Testicle | 5 | Lower jaw | 4 | Larynx | 1 |
| Uterus | 4 | Bladder, Kidney | 4 | Oesophagus | 1 |
| Prostate | 4 | Mesentery | 4 | | |
| Mesentery | 4 | Gall-bladder | 2 | | |
| Gall-bladder | 4 | Lip | 1 | | |
| Lip | 3 | | | | |

| Both sexes | Males | Females |
|-----------------|-----------------|----------------|
| Other organs 30 | Other organs 19 | Other organs 6 |
| 1,119 | 753 | 366 |

N. Suzuki: Statistical studies on malignant tumors; Japan. Kyoto Medical Journal, 1918.

4. GYNECOLOGICAL CLINICS.

Iwase Clinic, Tokyo Imperial University, and Kawasoye Clinic, Keio University Medical College, donated the data for 1919-1928 and for 1920-1929 respectively.

The total number of patients included in the data was 151,196, of which 3,400 were cancer patients with the ratio of 2.2%.

The cancer patients consisted of the following:—

| | |
|--------------------------|-------------|
| Uterus (cervix and body) | 3,344 |
| Vagina | 42 |
| Vulva | 5 |
| Ovary | 7 |
| Mamma | 2 |
| | <hr/> 3,400 |

The number of in-patients at the Kawasoye Clinic were classified as follows:—

| | |
|--------------------------|--------|
| Total no. of in-patients | 11,476 |
|--------------------------|--------|

Cancer patients.

| Sites | No. of cases |
|------------------|--------------|
| Body of uterus | 15 |
| Cervix of uterus | 684 |
| Vagina | 22 |
| Ovary | 17 |
| Mamma | 2 |
| Rectum | 2 |
| Total | <hr/> 742 |

The above indicates how predominant is cancer of the cervix, amounting as it does to more than 92% of all cancers, and over 98% of all uterine cancers.

5. OTO-RHINO-LARYNGOLOGICAL CLINICS.

The data considered here came from the following five sources :
Wada Clinic, Sendai ; Masuda Clinic, Tokyo ; Okonogi Clinic, Tokyo ;
Kikuchi Hospital, Tokyo ; Kubo Clinic, Fukuoka.

Table B V.

Oto-rhino-laryngology. 4 Clinics, 1 Hospital.

| | Both Sexes | | | Males | | | Females | | |
|--------------------|-----------------|---------|---------|-----------------|-------|---------|-----------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Larynx | 408 | (31.22) | Larynx | 332 | (33.37) | Upper jaw | 103 | (33.01) |
| 2 | Upper jaw | 304 | (23.26) | Upper jaw | 201 | (20.20) | Larynx | 76 | (24.36) |
| 3 | Oesophagus | 229 | (17.52) | Oesophagus | 183 | (18.39) | Oesophagus | 46 | (14.74) |
| 4 | Tongue | 129 | (9.87) | Tongue | 99 | (9.95) | Tongue | 30 | (9.62) |
| 5 | Pharynx | 83 | (6.35) | Pharynx | 61 | (6.13) | Pharynx | 22 | (7.05) |
| 6 | Mouth | 51 | (3.90) | Mouth | 41 | (4.12) | Nasal cavity | 12 | (3.85) |
| 7 | Nasal cavity | 38 | (2.91) | Nasal cavity | 26 | (2.62) | Mouth | 10 | (3.21) |
| 8 | Tonsil | 28 | (2.14) | Tonsil | 24 | (2.41) | Cervical region | 5 | (1.60) |
| 9 | Cervical region | 12 | (0.92) | Nose | 9 | (0.90) | Tonsil | 4 | (1.25) |
| 10 | Nose | 11 | (0.84) | Cervical region | 7 | (0.70) | Ear | 3 | (0.96) |
| 11 | Ear | 9 | (0.69) | Ear | 6 | (0.60) | Nose | 2 | (0.46) |
| 12 | Cheek | 2 | (0.15) | Cheek | 2 | (0.20) | Lower jaw | | |
| 13 | Lower jaw | 2 | (0.15) | Lower jaw | 1 | | | | |
| 14 | Trachea | 1 | | Trachea | 1 | | | 1 | |
| | Thyroid gland | 1 | | Temporal region | 1 | | | | |
| | Temporal region | 1 | | | | | | | |
| Total | | 1,307 | | | | 995 | | | 312 |
| Number of patients | | 110,036 | | | | 68,138 | | | 41,900 |

The number of patients included were :

| | No. of patients | No. of cancer patients | Ratio |
|---------|-----------------|------------------------|-------|
| Males | 68,138 | 995 | 1.46 |
| Females | 41,900 | 312 | 0.74 |
| Total | 110,038 | 1,307 | 1.27 |

It is quite natural that cancers in the field of oto-rhino-laryngology are for the most part of larynx, upper jaw, tongue, pharynx, buccal cavity, nasal cavity, tonsil, etc., and this fact clearly shows how important it is to take into consideration the data from oto-rhinological, dermatological and other special branches of medicine in making statistical observations on the frequency of cancer in various organs of the body.

The most striking fact shown in Table B V is the marked frequency of laryngeal cancer in the male, amounting to about one-third of the total cancers. Laryngeal cancer ranks first in male as well as in both sexes combined, but it takes second place in the female, constituting about one-fourth of the total cancers.

Cancer of upper jaw follows laryngeal cancer in point of frequency. It ranks first in female and second in both sexes combined. In both sexes combined, the ratio of cancer of the upper jaw to that of the larynx is 4:3.

In both sexes cancer of oesophagus, tongue, and of pharynx rank third, fourth and fifth respectively, followed by cancer of the mouth cavity, nasal cavity, tonsil, neck, etc. Taking all in all it seems that in oto-rhino-laryngological materials the cancer rate shows no marked difference as to the sexes.

6. UROLOGICAL AND DERMATOLOGICAL CLINICS.

Five clinics donated statistical materials, namely: Sendai (Ota Clinic), Tokyo (Toyama Clinic), Sapporo, Kanazawa, and Keio University Clinic, Tokyo. The patients dealt with were out-patients, and included the following numbers:—

| | Total patients | Cancer patients | Ratio |
|---------|----------------|-----------------|-------|
| Males | 143,894 | 297 | 0.2 |
| Females | 72,186 | 78 | 0.1 |
| Total | 216,080 | 375 | 0.17 |

Table B VI.
Dermatology-Urology. 5 Clinics.

| | Both Sexes | | | Males | | | Females | | |
|--------------------|------------|---------|---------|------------|-------|---------|-----------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Skin | 138 | (36.80) | Penis | 114 | (38.39) | Skin | 41 | (52.56) |
| 2 | Penis | 114 | (30.40) | Skin | 97 | (32.66) | Breast | 13 | (16.67) |
| 3 | Bladder | 37 | (9.87) | Bladder | 26 | (8.75) | Bladder | 11 | (14.10) |
| 4 | Tongue | 18 | (4.80) | Tongue | 16 | (5.39) | Uterus | 3 | (3.85) |
| 5 | Breast | 13 | (3.47) | Prostate | 12 | (4.04) | Upper jaw | 3 | (3.85) |
| 6 | Prostate | 12 | (3.20) | Mouth | 10 | (3.37) | Lip | 2 | (2.56) |
| 7 | Mouth | 10 | (2.67) | Lip | 6 | (2.02) | Tongue | 2 | (2.56) |
| 8 | Lip | 8 | (2.13) | Lower jaw | 5 | (1.68) | Lower jaw | 1 | |
| 9 | Upper jaw | 7 | (1.87) | Upper jaw | 4 | (1.35) | Stomach | 1 | |
| 10 | Lower jaw | 6 | (1.60) | Oesophagus | 3 | (1.01) | Rectum | 1 | |
| 11 | Oesophagus | 3 | (0.80) | Larynx | 1 | | | | |
| 12 | Uterus | 3 | (0.80) | Nose | 1 | | | | |
| 13 | Stomach | 2 | (0.53) | Stomach | 1 | | | | |
| 14 | Rectum | 2 | (0.53) | Rectum | 1 | | | | |
| 15 | Nose | 1 | (0.27) | | | | | | |
| 16 | Larynx | 1 | (0.27) | | | | | | |
| Total | | 375 | | 297 | | | 78 | | |
| Number of patients | | 216,080 | | 143,894 | | | 72,186 | | |

In both sexes combined, the first rank is taken by skin cancer,

and the cancer of the penis comes second, these two forms of cancer being especially abundant. Cancer of the bladder is in the third rank, although actually this category amounts to less than 10% of the total cancers. Other sites are, tongue, mammary gland, prostate, mouth cavity, lips, upper jaw, lower jaw, etc., in the order of frequency.

In the male, cancer of penis ranks first, being more frequent than skin cancer. It has often been stated that cancer of the penis is common among Koreans and Chinese. This is in sharp contrast to the fact that in European countries and in America statistics show a fair frequency of cancer of the skin, and scrotal cancer, but the penis is rarely a site of cancer development.

Our data include, in spite of being dermatological and urological material, only a small number of prostate cancers, which again is in striking contrast to the American and European statistics. All these facts emphasize anew the necessity of a comparative study of the cancer situation in the Orient and in the Occident. A further discussion on this point will be given in Part IV.

7. DENTAL CLINIC.

The following statistical data were supplied by Tsuzuki Clinic, Tokyo (1928-1929).

| | No. of patients | Cancer patients | Ratio |
|---------|-----------------|-----------------|-------|
| Males | 2,544 | 14 | 0.5 |
| Females | 2,155 | 4 | 0.18 |
| Total | 4,699 | 18 | 0.37 |

Cancer patients were as follows:

| Primary sites | Males | Females | Total |
|---------------|-------|---------|-------|
| Mouth cavity | 3 | 0 | 3 |
| Tongue | 2 | 0 | 2 |
| Upper jaw | 4 | 2 | 6 |
| Lower jaw | 5 | 2 | 7 |
| Total | 14 | 4 | 18 |

8. OPHTHALMOLOGICAL CLINIC.

The data given below were contributed from Ishiwara Ophthalmological Clinic, Tokyo Imperial University. They include 15,108 out-patients coming to the clinic during 1928-1929, and only 2 of these patients had cancer.

| Primary site | Male | Female | Total |
|------------------------|------|--------|-------|
| Conjunctiva. Right eye | 1 | 0 | 1 |
| Right eyelid | 1 | 0 | 1 |
| Total | 2 | 0 | 2 |

9. HOSPITALS FOR GASTRO-INTESTINAL DISEASES.

Three hospitals for gastro-intestinal diseases in Tokyo, namely, Minami, Sugimoto, and Jinbo Hospitals, donated the following data.

| | Total patients | Cancer patients | Ratio |
|---------|----------------|-----------------|-------|
| Males | 13,667 | 1,284 | 9.2 |
| Females | 6,441 | 368 | 5.7 |
| Total | 20,108 | 1,652 | 8.2 |

Statistics of the hospitals for gastro-intestinal diseases are of special interest the in comparative study of cancer rates in different organs of the digestive system. It seems to be an indisputable fact that cancer of the digestive system is especially frequent in Japan, and it is for this reason that I am particularly interested in looking into the statistics from the hospitals for gastro-intestinal diseases.

The first point that attracts our attention in Table B VII is the marked frequency of gastric cancer. In both sexes combined gastric cancer amounts to about 80% of all cancers. This is not surprizing, however, when we recall that gastric cancer comes up to about 50% of all cancers in the statistics of general hospitals and to about 70% in those of internal clinics.

Among other cancers, oesophageal cancer comes next in the male with the total number of 108 (8.4%), while in the female second place is taken by liver cancer with 26 cases (7.06%). The

Table B VII.
3 Hospitals for gastro-intestinal diseases.

| | Both Sexes | | | Males | | | Females | | |
|--------------------|--------------|--------|---------|--------------|-------|---------|------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 1,313 | (79.38) | Stomach | 1,024 | (79.75) | Stomach | 289 | (78.53) |
| 2 | Oesophagus | 131 | (7.92) | Oesophagus | 108 | (8.41) | Liver | 26 | (7.06) |
| 3 | Liver | 106 | (6.41) | Liver | 80 | (6.23) | Oesophagus | 23 | (6.25) |
| 4 | Rectum | 56 | (3.39) | Rectum | 43 | (3.35) | Intestine | 15 | (4.08) |
| 5 | Intestine | 37 | (2.23) | Intestine | 22 | (1.71) | Rectum | 13 | (3.55) |
| 6 | Peritoneum | 4 | (0.24) | Peritoneum | 3 | (0.23) | Uterus | 2 | (0.54) |
| 7 | Pancreas | 3 | (0.23) | Pancreas | 3 | (0.23) | Peritoneum | 1 | |
| 8 | Uterus | 2 | (0.12) | Gall-bladder | 1 | (0.08) | Breast | 1 | |
| | Breast | 1 | (0.06) | | | | | | |
| | Gall-bladder | 1 | (0.06) | | | | | | |
| Total | | 1,654 | | 1,284 | | | 370 | | |
| Number of patients | | 20,108 | | 13,667 | | | 6,441 | | |

liver cancer is at the third place in the male; rectal cancer at fourth place, corresponding to 3.35%, and intestinal cancer 1.7%. In the female there are slightly more intestinal cancers than rectal cancers.

A comparison of data from the hospitals for gastro-intestinal diseases may be presented as follows:—

| | Stomach | Oesophagus | Rectum | Intestine | Liver |
|---------|----------|------------|--------|-----------|-------|
| Males | 1,024 | 108 | 43 | 22 | 80 |
| | (9.5:1) | | | | |
| Females | 289 | 23 | 13 | 15 | 26 |
| | (12.5:1) | | | | |
| Total | 1,313 | 131 | 56 | 37 | 106 |
| | (10:1) | | | | |

10. CLINICAL DEPARTMENT OF THE JAPANESE SOCIETY
OF CANCER RESEARCH.

Patients treated at the Clinical Department of the Japanese Society of Cancer Research, conducted at the Koishikawa branch of the Tokyo Imperial University Hospital, are all sufferers from malignant tumors, which are mostly carcinomata, with the exception of a few patients with myoma uteri. The total number of cancer patients is 1,158, of which 444 are males and 714 females.

Classified according to the organs they arrange themselves as follows:—

Table B VIII. 1923-1930.

Clinical Department of the Japanese Society for
Cancer Research.

| | Both Sexes | | | Males | | | Females | | |
|----|---------------|-------|--------|------------|-------|--------|---------------|-------|--------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Uterus | 492 | (42.5) | Stomach | 126 | (28.3) | Uterus | 492 | (68.9) |
| 2 | Stomach | 164 | (14.1) | Oesophagus | 47 | (10.6) | Breast | 89 | (12.4) |
| 3 | Breast | 90 | (7.8) | Upper jaw | 46 | (10.6) | Stomach | 38 | (5.3) |
| 4 | Rectum | 60 | (5.2) | Rectum | 46 | (10.6) | Rectum | 14 | (1.9) |
| 5 | Upper jaw | 59 | (5.2) | Lung | 42 | (9.5) | Upper jaw | 12 | (1.7) |
| 6 | Oesophagus | 56 | (4.9) | Tongue | 37 | (8.3) | Lung | 12 | (1.7) |
| 7 | Lung | 54 | (4.6) | Kidney | 19 | (4.3) | Ovary | 11 | (1.6) |
| 8 | Tongue | 40 | (3.4) | Parotis | 15 | (3.4) | Thyroid gland | 10 | (1.4) |
| 9 | Kidney | 25 | (2.1) | Skin | 12 | (2.7) | Oesophagus | 9 | (1.3) |
| 10 | Parotis | 21 | (1.8) | Penis | 10 | (2.2) | Parotis | 6 | (0.8) |
| 11 | Thyroid gland | 13 | (1.1) | Lip | 6 | (1.4) | Kidney | 6 | (0.8) |

| | Both Sexes | | | Males | | | Females | | |
|-------|--------------------|-------|--------|--------------------|-------|-------|------------------|-------|-------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 12 | Skin | 13 | (1.1) | Pharynx | 6 | (1.4) | Tongue | 3 | (0.4) |
| 13 | Ovary | 11 | (0.9) | Bladder | 5 | (1.2) | Hypophy- sis | 3 | (0.4) |
| 14 | Penis | 10 | (0.9) | Hypophy- sis | 4 | (0.9) | Lip | 2 | |
| 15 | Lip | 8 | (0.7) | Larynx | 4 | (0.9) | Skin | 1 | |
| 16 | Hypophy- sis | 7 | (0.6) | Thyroid gland | 3 | (0.7) | Mouth | 1 | |
| 17 | Pharynx | 6 | (0.5) | Mouth | 2 | | Lower jaw | 1 | |
| 18 | Bladder | 5 | (0.4) | Tonsil | 2 | | Pancreas | 1 | |
| 19 | Larynx | 4 | (0.3) | Lower jaw | 2 | | Gall- bladder | 1 | |
| 20 | Lower jaw | 3 | | Intestine | 2 | | | | |
| 21 | Mouth | 3 | | Perito- neum | 2 | | | | |
| 22 | Tonsil | 2 | | Testicle | 2 | | | | |
| 23 | Intestine | 2 | | Meibomian gland | 2 | | | | |
| 24 | Perito- neum | 2 | | Breast | 1 | | | | |
| 25 | Testicle | 2 | | Gall- bladder | 1 | | | | |
| 26 | Meibomian gland | 2 | | | | | | | |
| 27 | Gall- bladder | 2 | | | | | | | |
| 28 | Pancreas | 1 | | | | | | | |
| Total | | | 1, 158 | | | | 444 | | |
| | | | | | | | | 714 | |

Gastric cancer again ranks first in the male, followed by oesophageal, upper jaw, rectal, pulmonary, and tongue cancers in the order given.

In the female, however, gastric cancers are relatively few in number, while uterine cancers are decidedly numerous, amounting to about three times the number of gastric cancers, which rank second in the combined rating of both sexes. This state of affairs

is largely explainable on account of the fact that in the clinical department of The Japanese Society of Cancer Research radiologic therapy is mainly carried out. The radiologic treatment is of no striking value for cancer of stomach, while, as is well known today, this form of treatment is widely used for uterine and mammary cancers and cancer of the mouth cavity, etc.

CHAPTER III.

CONSIDERATION OF STATISTICAL DATA FROM VARIOUS
CLINICAL DEPARTMENTS AS A WHOLE.

In the preceding pages I have given the details of all the reports that have been received from various clinics and hospitals. I shall now proceed to compile the entire data in the form of a single table, in order to make correlative observations. The individual tables for various Clinical Departments given in Chapter II have their own respective merits, and the composite table of all these should prove to be a source of important statistics from which to study the relative frequency of cancer in different organs, as discernable from clinical diagnosis. It was indeed my primary desire that statistics of this nature be compiled.

Table B IX is this desired composite of the 51 reports received from 43 clinics and 8 hospitals.

The number of all patients :

| | |
|---------|---------|
| Males | 370,554 |
| Females | 360,435 |
| Total | 730,989 |

Of the above ; cancer patients are

| | |
|---------|--------|
| Males | 11,608 |
| Females | 9,174 |
| Total | 20,782 |

Table B IX.

Composite Table of the entire clinical Statistics.
(Organs arranged in the Order of Cancer rate)

| | Both Sexes | | | Males | | | Females | | |
|---|------------|-------|---------|------------|-------|---------|---------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 8,743 | (42.13) | Stomach | 8,528 | (56.02) | Uterus | 4,201 | (46.27) |
| 2 | Uterus | 4,201 | (20.22) | Oesophagus | 751 | (6.45) | Stomach | 2,208 | (24.32) |

| | Both Sexes | | | Males | | | Females | | |
|----|---------------|-------|--------|---------------|-------|--------|---------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 3 | Rectum | 1,065 | (5.14) | Rectum | 720 | (6.18) | Breast | 957 | (10.54) |
| 4 | Breast | 974 | (4.69) | Liver | 711 | (6.10) | Rectum | 345 | (3.80) |
| 5 | Liver | 925 | (4.46) | Upper jaw | 447 | (3.84) | Upper jaw | 221 | (2.43) |
| 6 | Oesophagus | 910 | (4.39) | Larynx | 358 | (3.07) | Liver | 214 | (2.36) |
| 7 | Upper jaw | 668 | (3.22) | Tongue | 342 | (2.94) | Oesophagus | 159 | (1.73) |
| 8 | Larynx | 439 | (2.11) | Skin | 276 | (2.37) | Intestine | 114 | (1.26) |
| 9 | Tongue | 421 | (2.03) | Intestine | 234 | (2.01) | Skin | 90 | (0.99) |
| 10 | Skin | 366 | (1.77) | Penis | 214 | (1.84) | Larynx | 81 | (0.89) |
| 11 | Intestine | 348 | (1.68) | Lung | 193 | (1.65) | Tongue | 79 | (0.87) |
| 12 | Lung | 227 | (1.10) | Mouth | 161 | (1.38) | Thyroid gland | 64 | (0.70) |
| 13 | Penis | 214 | (1.03) | Pharynx | 71 | (0.61) | Peritoneum | 51 | (0.56) |
| 14 | Mouth | 199 | (0.96) | Pancreas | 65 | (0.56) | Vagina | 49 | (0.54) |
| 15 | Peritoneum | 103 | (0.50) | Gall-bladder | 54 | (0.46) | Gall-bladder | 45 | (0.50) |
| 16 | Gall-bladder | 99 | (0.48) | Bladder | 54 | (0.46) | Ovary | 44 | (0.49) |
| 17 | Thyroid gland | 97 | (0.47) | Peritoneum | 52 | (0.45) | Mouth | 38 | (0.42) |
| 18 | Pharynx | 94 | (0.46) | Kidney | 49 | (0.43) | Lung | 34 | (0.39) |
| 19 | Pancreas | 84 | (0.41) | Lip | 40 | (0.34) | Pharynx | 23 | (0.25) |
| 20 | Bladder | 77 | (0.38) | Thyroid gland | 33 | (0.28) | Bladder | 23 | (0.25) |
| 21 | Kidney | 69 | (0.34) | Nasal cavity | 26 | (0.22) | Kidney | 20 | (0.22) |
| 22 | Lip | 50 | (0.24) | Bile-duct | 26 | (0.22) | Pancreas | 19 | (0.21) |
| 23 | Vagina | 49 | (0.24) | Tonsil | 24 | (0.21) | Bile-duct | 12 | (0.13) |
| 24 | Ovary | 44 | (0.22) | Prostate | 22 | (0.19) | Nasal cavity | 12 | (0.13) |
| 25 | Nasal cavity | 38 | (0.18) | Testicle | 20 | (0.17) | Lip | 10 | (0.11) |
| 26 | Bile-duct | 38 | (0.18) | Lower jaw | 18 | (0.15) | Parotis | 9 | (0.10) |

| | Both Sexes | | | Males | | | Females | | |
|-----------------------|---------------------------------------|-----------|--------|------------------|-------|--------|-------------------|-------|--------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 27 | Tonsil | 28 | (0.14) | Breast | 17 | (0.14) | Lower jaw | 9 | (0.10) |
| 28 | Lower jaw | 27 | (0.14) | Branchi- ogen | 16 | (0.13) | Mediasti- num | 8 | (0.08) |
| 29 | Parotis | 24 | (0.13) | Parotis | 15 | (0.12) | Neck | 6 | (0.07) |
| 30 | Prostate | 22 | (0.11) | Salivary gl. | 13 | (0.11) | Urethra | 5 | (0.06) |
| 31 | Testis | 20 | (0.10) | Mediasti- num | 11 | (0.09) | Nose | 4 | (0.04) |
| 32 | Branchi- ogen | 20 | (0.10) | Nose | 10 | (0.08) | Tonsil | 4 | (0.04) |
| 33 | Mediasti- num | 19 | (0.09) | Neck | 9 | (0.08) | Branchi- ogen | 4 | (0.04) |
| 34 | Neck | 15 | (0.07) | Ear | 7 | (0.06) | Ear | 3 | (0.03) |
| 35 | Salivary gl. | 14 | (0.07) | Hypophy- sis | 5 | (0.04) | Hypophy- sis | 3 | (0.03) |
| 36 | Nose | 14 | (0.07) | Pleura | 4 | (0.03) | Pleura | 2 | (0.02) |
| 37 | Ear | 10 | (0.05) | Eye | 3 | (0.03) | Salivary gland | 1 | |
| 38 | Hypophy- sis | 8 | (0.04) | Cheek | 2 | | Anus | 1 | |
| 39 | Pleura | 6 | (0.03) | Scrotum | 2 | | Eye | 1 | |
| 40 | Urethra | 5 | (0.02) | Spleen | 2 | | Spleen | 1 | |
| 41 | Eye | 4 | (0.02) | Anus | 1 | | | | |
| 42 | Spleen | 3 | (0.01) | Retina | 1 | | | | |
| 43 | Scrotum | 2 | | Trachea | 1 | | | | |
| 44 | Cheek | 2 | | Adrenal | 1 | | | | |
| 45 | Anus | 2 | | Navel | 1 | | | | |
| 46 | Retina Trachea Adrenal Navel | 1 each | | | | | | | |
| Total | | 20,782 | | 11,608 | | | 9,174 | | |
| Number of patients | | 730,989 | | 370,554 | | | 360,435 | | |

Table B IX is based on numerous data which have been collected

from sources of relatively even distribution, and with diagnosis by competent professors in charge. It is, therefore, not too much to hope that the true state of affairs may be ascertained through this table. It is unavoidable that, in this table, the number of patients examined differs in different clinical departments, and this naturally gave a larger number of cancer cases in departments examining a larger number of patients, and less cancer cases in other departments dealing with fewer patients. There are various other conditions that must be taken into consideration before arriving at a correct conclusion, but all these drawbacks are common to the vital statistics in Part I of this paper, and to statistics based on autopsy material in Part III. The statistical figures as calculated out are not to be directly adopted as representing the actual condition. I shall describe my observations in Part IV, taking due note of all the factors that may enter into this complex problem. However, the statistical figures as they appear in Table B IX bring out several important points, which may profitably be discussed.

Different organs may be arranged as in Table B IX according to the frequency of cancer development, in male, in female, and in both sexes combined.

The striking frequency of gastric cancer first attracts attention. It amounts to more than 56% of all cancers in the male, and to 42% in both sexes. On this point, statistics based on autopsy cases and also vital statistics agree well. Even in the female, gastric cancer ranks second, being slightly less than half the number of uterine cancers, which take first place in this sex.

The marked frequency of uterine cancer in Japan is clearly shown in the table.

Mammary gland cancer amounts to only less than one-fourth the number of uterine cancers, and ranks third among cancers in the female, fourth in both sexes combined. Hepatic and oesophageal cancers rank below mammary cancer. The statement that mammary cancer is infrequent in Japan is based on vital statistics only

and means that it is infrequent in comparison with uterine cancer. The actual number of mammary gland cancers in Japan is not small,

Even excluding gastric cancer, cancers of the intestine, oesophagus, rectum, tongue, oral cavity, etc., when combined amount to an exceedingly large number, and if one adds to that the cancers of liver, gall-bladder, bile duct, pancreas, pharynx etc., the total number of cancers of the digestive system becomes surprisingly great. Especially in the male, where uterine cancer and most of the mammary gland cancers are excluded, the overwhelming majority of cancers may be said to originate in the digestive system, the actual number being 9,661 out of the total cancers of 11,608, amounting to over 83 per cent.

Among the cancers of the intestinal canal, rectal cancer is most frequent both in male and in female. In the male it takes the third rank with 720 (6.18%), in the female the fourth rank, with 345 (3.8%); and in both sexes combined, third rank, with 1,065 (5.14%). Total cancers of other parts of the intestine rank ninth in the male, with 234 (2.01%), eighth in female with 114 (1.26%), and it is very conspicuously less frequent than rectal cancers.

The abundance of hepatic cancer is worthy of special notice. Hepatic cancer ranked second (next to gastric cancer) in the statistics of internal medicine, but in the composite table it ranks fourth in the male, 711 (6.1%), and sixth in the female, 214 (2.36%). In both sexes combined it ranks fifth, amounting to over 925 (4.4%) of all cancers. A number of metastatic growths are likely to be included in these figures, but, even making allowance for that circumstance, it must be accepted as indisputable that hepatic cancer is decidedly more frequent in Japan than in America or Europe. Further evidence for this conclusion will be presented when we consider statistics based on autopsy cases.

Oesophageal cancer, in both sexes combined, is about as frequent as hepatic cancer, corresponding to 4.37% (910) of all cancers. Cancer of the oesophagus is well known to be frequent in the male,

and the data given in the table give it the second rank in the male, with 751 cases (6.47%), and seventh rank in the female, with only 159 cases or 1.73%. Oesophageal cancer in the male is about four times as numerous as in the female.

Cancer of the upper jaw is relatively more frequent in the male than in the female, but the difference is slight. It is a fairly common cancer in both sexes.

Cancer of the larynx amounts to 3.08% in male and to 0.89% in female of all cancers, being 3.4 times more frequent in the former than in the latter sex.

Cancer of tongue also stands in a similar relation, being 342 (2.94%) in male, 79 (0.84%) in female, and 2.04% in both sexes combined. The actual number of tongue cancers is 421.

Skin cancer in male is twice as frequent as in female, the actual figures being 279 (2.40%) for male, and 93 (1.01%) for female. It ranks tenth among all cancers in both sexes combined, 366 (1.77%).

Lung cancers amount to 193 (1.66%) for male and 34 (0.37%) for female, being about four and one-half times more frequent in the male than in the female.

Cancer of penis ranks tenth in the male, amounting to 1.84% of all cancers. In both sexes combined it falls to the thirteenth rank (1.04%). This indicates that cancer of the penis is fairly common in Japan, but the frequency in this country is not to be compared with that in Korea or China where cancer of this site is astonishingly abundant.

In both sexes combined the fourteenth rank as site of cancer is held by the mouth cavity, followed in the order given by peritoneum, gall-bladder, thyroid glands, larynx, pancreas, kidney, lip, vagina, ovary, nasal cavity, bile-duct, tonsils, lower jaw, parotid gland, prostate, testicle, salivary gland, hypophysis, pleura, urethra, etc.

Among these cancers of minor importance thyroid cancers number 64 (0.7%) in female and 33 (0.29%) in male, being more

than twice as frequent in the former as in the latter sex.

Gall-bladder cancer amounts to 0.46% in male and 0.48% in female, being about equally frequent in both sexes. There are slightly more peritoneal cancers in the female than in the male. Cancer of the bile-duct is of approximately the same ratio in both sexes.

Slightly more cancers of bladder, larynx (0.61 in male, 0.25 in female), pancreas (0.56 in male, 0.21 in female), kidney (0.42 in male, 0.22 in female), lip (0.34 in male, 0.10 in female), etc., are found in male than in female.

To summarize, with the exception of the reproductive system, among the organs common to both sexes, the thyroid gland is the only one showing more cancer in the female than in the male. Gall-bladder, peritoneum, bile duct, etc., are affected with cancer with equal frequency in both sexes, or only slightly more frequently in the female.

The generally rare urethral cancers were found in five cases, but it is noteworthy that all the five were females.

With the exception of these few categories, cancers of practically all the organs are more frequent in male than in female. In spite of this, vital statistics give about an equal number of cancer deaths for male and female. Total number of cancers in male and female are in fairly close agreement in Table B IX also. Uterine and mammary cancers are responsible for creating this situation.

Special mention may be made here of the marked infrequency in Japan of prostate cancer, which is rather common in Europe and America. A similar relation holds also with scrotal cancers, of which we have seen only two cases.

Finally the data in Table B IX may be reclassified according to the International System, and be compared with the Japanese vital statistics for 1930 (Table A V), as shown in Table B X.

In comparing A and B of the above table, it is natural to find that they do not agree in some of the points, since A is based

Table B X.

Comparison of Clinical Data and Vital Statistics classified
in accordance with the International System.

| | A. Vital Statistics (1930) | | | B. Clinical Data | | |
|---|----------------------------|------------------|------------------|------------------|-----------------|------------------|
| | Males | Females | Total | Males | Females | Total |
| Buccal cavity (43) | 825 (3.8) | 318 (7.5) | 1,143 (2.7) | 1,032 (8.9) | 360 (3.9) | 1,392 (6.7) |
| Stomach, Liver, Oesophagus, etc. (44) | 18,274 (83.8) | 11,260 (51.5) | 29,543 (67.8) | 8,139 (70.1) | 2,661 (29.3) | 10,800 (51.9) |
| Intestine, Rectum, Periton. (45) | 1,240 (8.5) | 1,350 (6.2) | 2,590 (6.0) | 1,007 (8.6) | 511 (5.6) | 1,518 (7.3) |
| Female repro- duct. organs (46) | — | 7,106 (32.7) | 7,106 (16.3) | — | 4,294 (47.1) | 4,294 (20.6) |
| Breast (47) | — | 714 (3.3) | 714 (1.6) | 17 (0.1) | 957 (10.4) | 974 (4.6) |
| Skin, Penis, etc. (48) | 126 (0.6) | 95 (0.5) | 221 (0.5) | 495 (4.3) | 93 (1.0) | 588 (2.8) |
| Other organs (49) | 1,328 (6.1) | 900 (4.5) | 2,228 (5.7) | 918 (7.8) | 301 (3.3) | 7,219 (5.8) |
| Total | 21,793 | 21,743 | 43,536 | 11,608 | 9,177 | 20,785 |

on vital statistics and B on statistics of the diagnosis of diseases. This difference in the nature of the two statistics may in part explain the greater frequency of mammary (47) and uterine cancers (46) in B than in A. The relatively higher frequency in B of cancer of mouth cavity (43) and of skin and penis (48) may also be similarly explainable. It is a notable fact that through the recent progress of medicine, cancers of these organs are detected early and the cases of complete cure following surgical operation are showing a considerable increase. The fact that cancers of uterus, mammary glands, mouth cavity, skin, etc., are represented by smaller figures in vital statistics than in clinical statistics may largely be accounted

for on the ground of the above reason, although the possible difference in the nature of the material constituting the statistics cannot be lost sight of.

The category No. 44, including gastric, oesophageal, hepatic and other cancers of the digestive system, shows a higher rate for A than for B, but this group makes up more than half the number of total cancers both in male and in female, and in this A and B agree. The actual rate is 83% for A and 70% for B. It is interesting that A and B also agree fairly well as to the rate for Categories No. 45 (cancers of intestine, rectum and peritoneum) and No. 49.

CHAPTER IV.

CANCER IN KOREA.

There is practically no literature available for cancer statistics in Korea, and Korean vital statistics have not as yet been compiled. This rendered it necessary to base my observations solely on the reports from various hospitals and clinics. My idea of making a separate study of Korean cancer statistics comes from the possibility that since Koreans are in several ways different from Japanese as to their mode of living and habits they may show some peculiarity in the cancer development in various organs. For this reason, the data to be considered in this chapter include only Koreans, and do not include Japanese residing in Korea.

Statistical data were kindly supplied by the Clinical Departments of the Faculty of Keijo Imperial University and of the Keijo Medical College. In addition, through the kind efforts of Professor Tokumitsu, the records of various provincial hospitals have been made available. The sources of material are :

Two surgical clinics, three clinics of internal medicine, and one dermato-urological clinic of Keijo Imperial University ; internal, surgical, gynecological, and oto-rhino-laryngological clinics of Keijo Medical College ; and 26 provincial hospitals, viz., Suigen, Keijo, Seishu, Koshu, Gunzan, Senshu, Nangen, Junten, Saishu, Taiko, Anto, Kinsen, Shinshu, Basan, Kaishu, Heijo, Chinnanho, Shingishu, Sosan, Shunsen, Koryo, Kanko, Ranan, Joshin, Kainei, and Kanto.

Gastric Cancer. This ranks first in the male with 42.26%, and also in both sexes combined with 35%. In the female, it follows uterine cancer and takes the second rank, amounting to about 25% of all cancers. The ratio of gastric cancer against total cancers is in close agreement with the statistics of Japan proper (Table B IX), but in the male (65%) and in both sexes combined (42.13%) figures for Japanese are slightly higher. In the female the Korean and Japanese rates (24.32%) are about the same.

Table B XI.
Cancer among Koreans.

| | Both Sexes | | | Males | | | Females | | |
|-----------------------|------------------|--------|---------|------------------|-------|---------|-----------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 243 | (35.01) | Stomach | 172 | (42.26) | Uterus | 126 | (43.90) |
| 2 | Uterus | 126 | (18.16) | Penis | 46 | (11.31) | Stomach | 71 | (24.74) |
| 3 | Liver | 59 | (8.50) | Liver | 40 | (9.83) | Breast | 34 | (11.85) |
| 4 | Penis | 46 | (6.63) | Skin | 31 | (7.62) | Liver | 19 | (6.62) |
| 5 | Skin | 37 | (5.33) | Tongue | 25 | (6.14) | Mouth | 7 | (2.44) |
| 6 | Breast | 36 | (5.19) | Upper jaw | 22 | (5.41) | Tongue | 6 | (2.09) |
| 7 | Tongue | 31 | (4.47) | Oesopha- gus | 21 | (5.16) | Skin | 6 | (2.09) |
| 8 | Upper jaw | 26 | (3.75) | Mouth | 17 | (4.18) | Upper jaw | 4 | (1.39) |
| 9 | Oesopha- gus | 25 | (3.60) | Rectum | 7 | (1.72) | Oesopha- gus | 4 | (1.39) |
| 10 | Mouth | 24 | (3.46) | Lip | 6 | (1.47) | Rectum | 4 | (1.39) |
| 11 | Rectum | 11 | (1.59) | Larynx | 5 | (1.23) | Larynx | 4 | (1.39) |
| 12 | Larynx | 9 | (1.30) | Intestine | 5 | (1.23) | Lip | 1 | (0.35) |
| 13 | Lip | 7 | (1.01) | Bladder | 2 | (0.49) | Neck | 1 | (0.35) |
| 14 | Intestine | 5 | (0.72) | Scrotum | 2 | (0.49) | | | |
| 15 | Bladder | 2 | (0.26) | Perito- neum | 2 | (0.49) | | | |
| 16 | Scrotum | 2 | (0.26) | Breast | 2 | (0.49) | | | |
| 17 | Neck | 2 | (0.26) | Gall- bladder | 1 | (0.25) | | | |
| 18 | Perito- neum | 2 | (0.26) | Neck | 1 | (0.25) | | | |
| 19 | Gall- bladder | 1 | (0.14) | | | | | | |
| Total | | 694 | | 407 | | | 287 | | |
| Number of patients | | 75,317 | | 49,345 | | | 25,972 | | |

Uterine Cancer. The first rank in the female and second rank in both sexes combined are taken by uterine cancer, and in this

the Korean statistics do not differ from Table B IX. The ratio of uterine cancer is very much alike in both sets of statistics.

Hepatic cancer ranks third in male, in both sexes combined and also in female. Without doubt these figures include some metastatic growth, but the occurrence of hepatoma seems very common in Korea as in Japan. This point is clear also from Professor Tokumitsu's report based on autopsy material.

According to Muro¹⁾ in Professor Tokumitsu's institute, among 960 autopsies performed during the period of eleven years, 733 were Koreans, and among these latter 6 cases of hepatoma (0.82%) were found. This percentage is close to the Japanese ratio. The high frequency of hepatoma in Korea seems acceptable as a fact.

Special attention may be directed to the cancer of penis, which ranks second in the male with 46 (11.31%) and fourth in both sexes combined (6.63%).

It is also notable that skin cancer is very abundant, next to cancer of penis. Skin cancer ranks fourth with 31 (7.62%) in male, seventh with 6 (2.09%) in female, and fifth with 37 (5.33%) in both sexes combined.

Mammary cancer occupies the third rank in female, with the actual number of 34 or 11.83%. The ratio of mammary cancer to uterine cancer is $126:34=3.7:1$. In Japan the uterine cancer amounts to slightly less than one-fourth the number of mammary cancers (Table B IX), being approximately the same as the ratio among Koreans.

Oesophageal cancer ranks below the cancer of tongue and of upper jaw in all sex groups, and this markedly differs from the situation in foreign countries. Cancer of mouth cavity is also relatively frequent. All these cancers are ranking higher than cancers of rectum, intestine, etc.

In contrast to the frequency of cancer of penis and skin, scrotal cancer is scarce. Also, there is not a single case of prostate cancer.

¹⁾ Yuzo Muro: Statistical and Histological Studies on Hepatoma occurring in Koreans. Journal of Korean Medical Society, vol. 22, No. 10, 1932.

CHAPTER V. APPENDIX.

CANCER IN CHINA.

The lack of national vital statistics and the great difficulty in securing autopsy material in China render it imperative that we depend on the clinical data available from hospitals for a statistical study on cancer in that country. In spite of the racial affinity of Chinese to Japanese, the food and other habits of life as well as customs of Chinese are considerably different from those of Japanese. Therefore, it is not without interest to investigate as far as possible the relative frequency of several forms of cancer in China, for such an investigation may well prove of value to the study of environmental factors for the development of cancer.

Hitherto a few reports on cancer in China have been published mainly based on data from hospitals conducted by foreigners. The data I now propose to report are kindly supplied, at my request, by Drs. Iijima, Takeoka, Jo, and Kurimoto, Directors of Peiping, Hankow, Tsinan, and Tsintao Hospitals respectively, under the auspices of the Dojin Society. It is a pleasure to express my indebtedness to these gentlemen for their cooperation.

The statistics represent the total data of the four hospitals of the Dojin Society above mentioned, including investigations on patients in three internal, four surgical, three gynecological, and three dermato-urological clinics. Most of the patients are out-patients. The statistics of each of these hospitals have already been printed in Gann, vol. 27, No. 1.

The more salient points in the table may be mentioned as follows :

Gastric cancer is conspicuous by its infrequency. No such low ratio of gastric cancer is found in any of the statistics, Japanese, European or American. The natural aversion of Chinese to surgical operation, the scarcity of autopsy, and other circumstances may be instrumental in giving the figure for gastric cancer lower than

Table B XII.

Cancer in China.

Total data from Peiping, Hankow, Tsinan, and Tsintao Hospitals of the Dojin Society, including 3 Internal, 4 Surgical, 3 Gynecological and 3 Dermato-urological Clinics.

| | Both Sexes | | | Males | | | Females | | |
|--------------------|-------------|--------|---------|-------------|-------|---------|-------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Uterus | 83 | (26.27) | Penis | 38 | (27.94) | Uterus | 83 | (46.11) |
| 2 | Breast | 73 | (23.10) | Oesophagus | 21 | (15.44) | Breast | 72 | (40.00) |
| 3 | Penis | 38 | (12.03) | Stomach | 17 | (12.50) | Rectum | 6 | (3.33) |
| 4 | Oesophagus | 23 | (7.28) | Rectum | 13 | (9.56) | Upper jaw | 6 | (3.33) |
| 5 | Stomach | 20 | (6.35) | Liver | 11 | (8.09) | Stomach | 3 | (1.67) |
| 6 | Rectum | 19 | (6.01) | Lip | 9 | (6.62) | Oesophagus | 2 | (1.11) |
| 7 | Upper jaw | 13 | (4.11) | Upper jaw | 7 | (5.15) | Skin | 2 | (1.11) |
| 8 | Liver | 12 | (3.80) | Skin | 7 | (5.15) | Liver | 1 | (0.56) |
| 9 | Lip | 9 | (2.85) | Tongue | 4 | (2.94) | Larynx | 1 | (0.56) |
| 10 | Skin | 9 | (2.85) | Bladder | 3 | (2.20) | Lower jaw | 1 | (0.56) |
| 11 | Tongue | 4 | (1.27) | Larynx | 2 | (1.47) | Branchiogen | 1 | (0.56) |
| 12 | Bladder | 3 | (0.95) | Lower jaw | 2 | (1.47) | Mediastinum | 1 | (0.56) |
| 13 | Larynx | 3 | (0.95) | Branchiogen | 1 | | Mouth | 1 | (0.56) |
| 14 | Lower jaw | 3 | (0.95) | Breast | 1 | | | | |
| 15 | Branchiogen | 2 | (0.63) | | | | | | |
| 16 | Mediastinum | 1 | | | | | | | |
| 17 | Mouth | 1 | | | | | | | |
| Total | | 316 | | | | 136 | | | 180 |
| Number of patients | | 72,762 | | | | 50,832 | | | 22,430 |

actual, but these statistics include data from three internal clinics, in addition to surgical and gynecological clinics, and gastric cancer

seems especially small in number in comparison with other internal cancers. In both sexes combined gastric cancer ranks fifth with 20 (6.35%), and in the male it ranks third with 17 (12.5%), preceded by cancer of penis and of oesophagus.

In the female, gastric cancer is still less frequent, there being only three cases (or 1.67%). This is a conspicuous fact, which does not seem entirely attributable to the insufficient nature of our data, and it suggests that cancer of the stomach may be actually comparatively infrequent among Chinese. This is a point which should be carefully investigated with adequate material and from various points of view. The existence of some relationship between the peculiarity of Chinese food and drink, both in material and in method of preparation, may possibly be established through further investigation.

Total cancers in the female number 180, being far more numerous than 136 cancers in the male. That such is the case in spite of the larger number of total male patients, 50 832, than female patients, 22,430, is due to the abundance in the female of uterine and mammary cancers.

Uterine cancers number 83, and rank first not only in the female (46.11%) but also in both sexes combined (26.27%). Mammary cancer is also very frequent, being nearly as abundant as uterine cancers. The total number of mammary cancers is 73 (of which 1 occurred in a male), and it ranks second in female as well as in both sexes combined. The ratio of uterine cancer to mammary cancer is approximately 8:7, which is strikingly different from the condition in Japan.

Cancer of penis is abundant, resembling the statistics in Korea. The ratio, as it appears in the above table, is higher in China than in Korea. In the latter territory cancer of penis ranks second (11%) in the male, but in China it takes the first rank among cancers in the male, amounting to 28%.

Also, in both sexes combined, penis cancer ranks second with

12%, which is considerably higher than 6.6% in Korea.

Previous reports are unanimous as to the abundance of cancer of penis in China. This fact is especially pointed out by Heine¹⁾ according to whom the ratio of penis cancer to total cancers in the male is 14.4% (Oppenheim), 19.8% (Braafladt), or 22.1% (Brecevitz), all based on statistics in hospitals of Shanghai, Tsinan, etc.

Oesophageal cancer, among other cancers, seems comparatively numerous. In my statistics it ranks second with 21 (15.4%), being more frequent than gastric cancer. It takes fourth rank in both sexes combined with 23 (7.28%), and sixth rank with 2 (1.1%) in the female. The marked difference between sexes as to the frequency of oesophageal cancer is clearly shown in these figures (21:2), being more than ten times as frequent in the male as in the female. Braafladt reported 16.2% for male and none for female.

Rectal cancer and cancer of upper jaw call for no special remarks.

Hepatic cancer was thought to be common in China by Heine, but this implied only that this form of cancer is relatively more frequent in China than in Europe or America. It seems to be less frequent in China than in Japan, Korea, or Dutch East Indies. In the above table, hepatic cancer comes next to rectal cancer and ranks sixth in the male. It takes eighth rank in both sexes combined as well as in female, and it appears not to be scarce. It must be said, however, that the actual determination of primary hepatic cancer requires autopsy, and it is well known that clinically diagnosed hepatic cancers include no small percentage of metastatic growths. I have already discussed this point in detail.

In any event, it is extremely interesting and important to investigate the frequency in China of cancers in various organs. It is hoped that accumulation of further material will permit the compilation of various detailed statistics. In this note I have only touched on a few of the more characteristic points insofar as the material at hand seems to indicate.

¹⁾J. Heine. Über Geschwülste bei Chinesen. Zeit. f. Krebsforsch., XXXIII, 1931.

Braafladt's¹⁾ statistics may be mentioned here for reference. According to these statistics, the mammary gland cancer is overwhelmingly abundant in the female, oesophageal and penis cancers are common, and gastric and hepatic cancers are in comparatively small numbers. In these and other points there is agreement between his statistics and my own. The fact that skin cancer is common is also noteworthy.

| | Males | Females |
|----------------------------------|-------|---------|
| Mouth cavity | 8.1% | 5.2% |
| Oesophagus | 16.2% | 0.0% |
| Stomach and liver | 23.2% | 5.2% |
| Peritoneum, intestine and rectum | 8.1% | 5.2% |
| Female reproductive organs | 0.0% | 13.8% |
| Mammary gland | 2.3% | 63.7% |
| Skin | 15.2% | 5.2% |
| Penis | 19.8% | 0.0% |
| Other sites | 7.1% | 1.0% |
| Total number of cases | 86 | 58 |

¹⁾ L. H. Braafladt. A Statistical Study of Cancer seen at Shantung Christian University Hospital, 1923-26. China Medical Journal, 1927.

Part III.

Observations based on Autopsy Material.

CHAPTER I.

CONCERNING MATERIAL.

The statistics dealt with in this part of the paper are entirely based on autopsy material of the Pathological Institute of Tokyo Imperial University. Previously, Ishibashi and Takatsu reported the statistics of this Institute for the twenty-one years extending from 1894 to 1914 (Gann, Vol. 9, No. 3, 1915). Our task, therefore, was to compile various statistics from data for the next eighteen years, namely, from 1915 to 1932. The combined data of Ishibashi and Takatsu and of ourselves furnish the complete material for the statistics for our Pathological Institute since the earliest period of its existence.

Ishibashi and Takatsu's report is recompiled in the form of Table C II, to represent the earlier period of the Pathological Institute, and our own table, C III, is to cover the later period. The total of these statistics for early and later periods is presented in Table C IV, which comprises the statistics for the entire period (1894-1932). Malignant tumors other than carcinomata have also been investigated, and the data for these are briefly given separately at the end of this chapter. The following accounts are limited only to data concerning carcinomata.

The actual number of autopsies performed on males and females, that of cancer cases, and the ratios, for early, later and total periods, are as follows:

A relative increase of cancer autopsies in the later period over the earlier period is evident in the above table.

Before making a comparison of cancer frequency in different organs it is necessary to look into the source of the autopsy material. As shown in Table C I, the majority of autopsies performed in our

| | Number of autopsies | | | | Number of cancer cases | | | Ratios | | |
|---------------------|---------------------|---------|-----------|--------|------------------------|---------|-------|--------|---------|-------|
| | Males | Females | Not clear | Total | Males | Females | Total | Males | Females | Total |
| Early period (CII) | 4,725 | 2,760 | | 7,485 | 567 | 245 | 812 | 12.0 | 8.88 | 10.84 |
| Later period (CIII) | 2,985 | 1,596 | 11 | 4,592 | 537 | 230 | 767 | 17.99 | 14.41 | 16.70 |
| Entire period | 7,710 | 4,356 | 11 | 12,077 | 1,104 | 475 | 1,579 | 14.32 | 10.93 | 13.07 |

Institute came from various clinical departments of the Tokyo Imperial University, and especially from the Clinics of Internal Medicine. A relatively small number of cases were received from

Table C I.

Autopsy Cases at the Pathological Institute, Tokyo Imperial University, for the later period (1915-1932), Classified according to the Clinical Departments Sending Them.

| Departments | Males | Females | Total |
|-------------------------------|-------|---------|-------|
| Internal medicine | 1,419 | 645 | 2,064 |
| Surgery | 327 | 188 | 515 |
| Gynecology | — | 177 | 177 |
| Pediatrics | 307 | 174 | 481 |
| Oto-rhino-laryngology | 69 | 24 | 93 |
| Dermato-urology | 53 | 17 | 70 |
| Ophthalmology | 9 | 2 | 11 |
| Psychiatrics | 34 | 14 | 48 |
| Orthopaedic surgery | 15 | 10 | 25 |
| Dentistry | 3 | 3 | 6 |
| Radiology | 0 | 1 | 1 |
| Outside of University clinics | 749 | 341 | 1,090 |
| Unclassified | | | 11 |
| Total | 2,985 | 1,596 | 4,592 |

surgical, gynecological and other clinics.

Most of the cases coming from outside hospitals and autopsies performed on special request are referable to the field of internal medicine. Such being the case, the bulk of the cancers dealt with at our Pathological Institute are of various internal organs, including a relatively small number of cancers of skin, mouth cavity, uterus, mammary gland, larynx, upper jaw, etc. In statistical observations based on autopsy material, it is extremely important to keep in mind the source of the material. Without paying due attention to this point, it is of little significance to compare the relative frequency of cancer development in various organs among different countries and cities.

The drawback to statistics based on autopsy material has been the uneven nature of the source of such material, and also the fact that such material is relatively small quantitatively. On the other hand, the autopsy statistics are unrivalled as to the absolute accuracy of diagnosis, and in this way are far more accurate than vital statistics and statistics based on clinical diagnosis, both of which may give figures that are often quite different from the actual conditions, especially for internal cancers that are difficult of accurate diagnosis. It is for this reason that autopsy statistics are important and essential in the study of the relative frequency of cancer in various organs.

In event of the publication in future of the third report, the early and late periods of the present paper and the period to be covered by the third report in question may conveniently be designated as the first, second and third periods respectively. I anticipate this eventuality (Nagayo).

CHAPTER II.

FREQUENCY OF CANCER IN VARIOUS ORGANS AS OBSERVED
AT THE PATHOLOGICAL INSTITUTÉ, TOKYO
IMPERIAL UNIVERSITY.

Tables C II, C III and C IV, representing the early period of the Pathological Institute, later period, and entire period, respectively, give the actual number and ratio against the total number of cancers in various organs, arranged according to the order of frequency.

Comparison of the Frequency of Cancer Development in
various Organs as observed at the Pathological
Institute, Tokyo Imperial University, during
1894-1932. Tables C II, C III and C IV.

Table C II.

Early Period (Ishibashi and Takatsu) 1894-1914 (21 years).

| | Both Sexes | | | Males | | | Females | | |
|----|--------------|-------|---------|--------------|-------|---------|---------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 355 | (43.72) | Stomach | 284 | (50.00) | Stomach | 71 | (28.98) |
| 2 | Oesophagus | 56 | (6.90) | Oesophagus | 44 | (7.75) | Uterus | 41 | (16.73) |
| 3 | Liver | 53 | (6.53) | Liver | 42 | (7.39) | Gall-bladder | 19 | (7.76) |
| 4 | Rectum | 44 | (5.31) | Rectum | 27 | (4.75) | Rectum | 17 | (6.94) |
| 5 | Uterus | 41 | (5.05) | Lung | 24 | (4.23) | Ovary | 13 | (5.31) |
| 6 | Gall-bladder | 34 | (4.19) | Upper jaw | 23 | (4.05) | Oesophagus | 12 | (4.90) |
| 7 | Lung | 33 | (4.06) | Bile-duct | 17 | (2.09) | Liver | 11 | (4.49) |
| 8 | Upper jaw | 31 | (3.82) | Gall-bladder | 15 | (2.64) | Lung | 9 | (3.67) |
| 9 | Bile-duct | 22 | (2.71) | Tongue | 13 | (2.29) | Upper jaw | 8 | (3.27) |
| 10 | Tongue | 16 | (1.97) | Pancreas | 12 | (2.11) | Mammary gland | 8 | (3.27) |
| 11 | Pancreas | 13 | (1.60) | Larynx | 10 | (1.76) | Caecum | 6 | (2.45) |

| | Both Sexes | | | Males | | | Females | | |
|-----------------------|------------------------|-------|--------|-----------|-------|--------|------------------------|-------|--------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 12 | Ovary | 13 | (1.60) | Bladder | 7 | (1.23) | Thyroid | 6 | (2.45) |
| 13 | Breast | 12 | (1.48) | Penis | 7 | (1.23) | Bile-duct | 5 | (2.04) |
| 14 | Caecum | 10 | (1.23) | Duodenum | 5 | (0.88) | Vagina | 4 | (1.63) |
| 15 | Larynx | 10 | (1.23) | Breast | 4 | (0.70) | Tongue | 3 | (1.22) |
| 16 | Thyroid | 9 | (1.10) | Caecum | 4 | (0.70) | Duodenum | 2 | (0.81) |
| 17 | Bladder | 8 | (0.99) | Mouth | 4 | (0.70) | Kidney | 2 | (0.81) |
| 18 | Duodenum | 7 | (0.86) | Thyroid | 3 | (0.53) | External genital organ | 2 | (0.81) |
| 19 | Penis | 7 | (0.86) | Adrenals | 3 | (0.53) | Mouth | 1 | |
| 20 | Mouth | 5 | (0.61) | Throat | 3 | (0.53) | Adrenals | 1 | |
| 21 | Adrenals | 4 | (0.49) | Pharynx | 3 | (0.53) | Bladder | 1 | |
| 22 | Vagina | 4 | (0.49) | Prostate | 3 | (0.53) | Pancreas | 1 | |
| 23 | Throat | 3 | (0.37) | Lip | 2 | (0.35) | Not clear | 2 | |
| 24 | Kidney | 3 | (0.37) | Skin | 1 | | | | |
| 25 | Pharynx | 3 | (0.37) | Kidney | 1 | | | | |
| 26 | Prostate | 3 | (0.37) | Bronchi | 1 | | | | |
| 27 | Mouth-Lip | 2 | (0.24) | Nose | 1 | | | | |
| 28 | External genital organ | 2 | (0.24) | Not clear | 4 | | | | |
| 29 | Skin | 1 | | | | | | | |
| 30 | Nose | 1 | | | | | | | |
| 31 | Bronchi | 1 | | | | | | | |
| 32 | Not clear | 6 | | | | | | | |
| Total | | | 812 | 567 | | | 245 | | |
| Number of dissections | | | 7,485 | 4,725 | | | 2,760 | | |

Table C III.
Later Period, 1915-1932 (18 years).

| | Both Sexes | | | Males | | | Females | | |
|----|--------------|-------|---------|--------------|-------|---------|------------------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 319 | (41.59) | Stomach | 242 | (45.07) | Stomach | 77 | (33.48) |
| 2 | Liver | 53 | (6.91) | Liver | 44 | (8.19) | Uterus | 27 | (11.74) |
| 3 | Lung | 53 | (6.91) | Lung | 35 | (6.52) | Lung | 18 | (7.83) |
| 4 | Gall-bladder | 31 | (4.04) | Oesophagus | 26 | (4.84) | Gall-bladder | 13 | (5.65) |
| 5 | Oesophagus | 30 | (3.91) | Gall-bladder | 18 | (3.35) | Pancreas | 10 | (4.35) |
| 6 | Pancreas | 28 | (3.65) | Pancreas | 18 | (3.35) | Breast | 10 | (4.35) |
| 7 | Uterus | 27 | (3.51) | Bile-duct | 17 | (3.17) | Liver | 9 | (3.91) |
| 8 | Bile-duct | 22 | (2.87) | Kidney | 14 | (2.61) | Ovary | 9 | (3.91) |
| 9 | Duodenum | 18 | (2.35) | Upper jaw | 13 | (2.42) | Bile-duct | 5 | (2.17) |
| 10 | Kidney | 16 | (2.07) | Duodenum | 13 | (2.42) | Duodenum | 5 | (2.17) |
| 11 | Upper jaw | 15 | (1.96) | Bladder | 10 | (1.86) | Pleura | 5 | (2.17) |
| 12 | Skin | 12 | (1.57) | Adrenals | 10 | (1.86) | Oesophagus | 4 | (1.75) |
| 13 | Adrenals | 12 | (1.57) | Skin | 9 | (1.68) | Skin | 3 | (1.30) |
| 14 | Bladder | 12 | (1.57) | Tongue | 7 | (1.30) | Rectum | 3 | (1.30) |
| 15 | Breast | 11 | (1.43) | Pleura | 6 | (1.12) | Thyroid | 3 | (1.30) |
| 16 | Pleura | 11 | (1.43) | Larynx | 5 | (0.93) | Colon | 3 | (1.30) |
| 17 | Ovary | 9 | (1.16) | Caecum | 5 | (0.93) | Throat | 3 | (1.30) |
| 18 | Tongue | 8 | (1.04) | Colon | 5 | (0.93) | Adrenals | 2 | (0.87) |
| 19 | Colon | 8 | (1.04) | Rectum | 4 | (0.74) | Vagina | 2 | (0.87) |
| 20 | Rectum | 7 | (0.91) | Throat | 4 | (0.74) | External genital organ | 2 | (0.87) |
| 21 | Larynx | 7 | (0.91) | Pharynx | 4 | (0.74) | Bladder | 2 | (0.87) |
| 22 | Throat | 7 | (0.91) | Testis | 4 | (0.74) | Larynx | 2 | (0.87) |

| | Both Sexes | | | Males | | | Females | | |
|-----------------------|------------------------|-------|--------|-------------|-------|--------|-------------|-------|--------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 23 | Caecum | 6 | (0.78) | Bronchi | 4 | (0.74) | Thymus | 2 | (0.87) |
| 24 | Pharynx | 5 | (0.65) | Thymus | 3 | (0.56) | Kidney | 2 | (0.87) |
| 25 | Thymus | 5 | (0.65) | Penis | 3 | (0.56) | Upper jaw | 2 | (0.87) |
| 26 | Bronchi | 5 | (0.65) | Prostate | 2 | (0.56) | Tongue | 1 | |
| 27 | Testis | 4 | (0.52) | Mouth-Lip | 2 | (0.56) | Caecum | 1 | |
| 28 | Thyroid | 4 | (0.52) | Hypophy-sis | 2 | (0.56) | Pharynx | 1 | |
| 29 | Penis | 3 | (0.39) | Breast | 1 | | Bronchi | 1 | |
| 30 | Hypophy-sis | 3 | (0.39) | Thyroid | 1 | | Ileum | 1 | |
| 31 | External genital organ | 2 | (0.26) | Perito-neum | 1 | | Hypophy-sis | 1 | |
| 32 | Vagina | 2 | (0.26) | Nose | 1 | | Nose | 1 | |
| 33 | Prostate | 2 | (0.26) | Mouth | 1 | | | | |
| 34 | Nose | 2 | (0.26) | Not clear | 3 | | | | |
| 35 | Mouth-Lip | 2 | (0.26) | | | | | | |
| 36 | Mouth | 1 | | | | | | | |
| 37 | Perito-neum | 1 | | | | | | | |
| 38 | Ileum | 1 | | | | | | | |
| 39 | Not clear | 3 | | | | | | | |
| Total | | | 767 | 537 | | | 230 | | |
| Number of dissections | | | 4,592* | 2,985 | | | 1,596 | | |

We shall first consider the more important points in Table C IV, which represents the data for the entire period since the foundation of our Pathological Institute. A comparison of the early (C II) and later periods (C III) will be attempted in the next chapter, where the difference in the frequency of cancer between the two periods will be discussed.

* Not clear 11.

Table C IV.
Total 1894-1932 (39 years).

| | Both Sexes | | | Males | | | Females | | |
|----|--------------|-------|---------|--------------|-------|---------|------------------------|-------|---------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 1 | Stomach | 674 | (42.68) | Stomach | 526 | (47.64) | Stomach | 148 | (31.11) |
| 2 | Liver | 106 | (6.71) | Liver | 86 | (7.79) | Uterus | 68 | (14.32) |
| 3 | Oesophagus | 86 | (5.45) | Oesophagus | 70 | (6.34) | Gall-bladder | 32 | (6.74) |
| 4 | Lung | 86 | (5.45) | Lung | 59 | (5.34) | Lung | 27 | (5.68) |
| 5 | Uterus | 68 | (4.36) | Upper jaw | 36 | (3.26) | Ovary | 22 | (4.63) |
| 6 | Gall-bladder | 65 | (4.11) | Bile-duct | 34 | (3.08) | Liver | 20 | (4.21) |
| 7 | Rectum | 51 | (3.23) | Gall-bladder | 33 | (2.99) | Rectum | 20 | (4.21) |
| 8 | Upper jaw | 46 | (2.91) | Rectum | 31 | (2.81) | Mammary gland | 18 | (3.79) |
| 9 | Bile-duct | 44 | (2.78) | Pancreas | 30 | (2.72) | Oesophagus | 16 | (3.37) |
| 10 | Pancreas | 41 | (2.60) | Tongue | 20 | (1.81) | Pancreas | 11 | (2.32) |
| 11 | Duodenum | 25 | (1.58) | Duodenum | 18 | (1.63) | Bile-duct | 10 | (2.11) |
| 12 | Tongue | 24 | (1.52) | Bladder | 17 | (1.54) | Upper jaw | 10 | (2.11) |
| 13 | Breast | 23 | (1.46) | Larynx | 15 | (1.36) | Thyroid | 9 | (1.89) |
| 14 | Ovary | 22 | (1.39) | Kidney | 15 | (1.36) | Duodenum | 7 | (1.47) |
| 15 | Bladder | 20 | (1.27) | Adrenals | 13 | (1.18) | Caecum | 7 | (1.47) |
| 16 | Kidney | 19 | (1.20) | Skin | 10 | (0.91) | Vagina | 6 | (1.26) |
| 17 | Larynx | 17 | (1.08) | Penis | 10 | (0.91) | Pleura | 5 | (1.05) |
| 18 | Caecum | 16 | (1.01) | Caecum | 9 | (0.82) | Kidney | 4 | (0.84) |
| 19 | Adrenals | 16 | (1.01) | Throat | 7 | (0.63) | External genital organ | 4 | (0.84) |
| 20 | Skin | 13 | (0.82) | Pharynx | 7 | (0.63) | Tongue | 4 | (0.84) |
| 21 | Thyroid | 13 | (0.82) | Pleura | 6 | (0.54) | Colon | 3 | (0.63) |
| 22 | Pleura | 11 | (0.70) | Colon | 5 | (0.45) | Adrenals | 3 | (0.63) |

| | Both Sexes | | | Males | | | Females | | |
|--------------------------|------------------------------|----------|--------|-----------------|-------|--------|-----------------|-------|--------|
| | Sites | Cases | % | Sites | Cases | % | Sites | Cases | % |
| 23 | Throat | 10 | (0.64) | Bronchi | 5 | (0.45) | Throat | 3 | (0.63) |
| 24 | Penis | 10 | (0.64) | Prostate | 5 | (0.45) | Skin | 3 | (0.63) |
| 25 | Pharynx | 8 | (0.51) | Mouth | 5 | (0.45) | Bladder | 3 | (0.63) |
| 26 | Colon | 8 | (0.51) | Breast | 5 | (0.45) | Larynx | 2 | (0.42) |
| 27 | Mouth | 6 | (0.38) | Testis | 4 | (0.36) | Thymus | 2 | (0.42) |
| 28 | Bronchi | 6 | (0.38) | Mouth-Lip | 4 | (0.36) | Pharynx | 1 | |
| 29 | Vagina | 6 | (0.38) | Thyroid | 4 | (0.36) | Bronchi | 1 | |
| 30 | Thymus | 5 | (0.32) | Thymus | 3 | (0.27) | Ileum | 1 | |
| 31 | Prostate | 5 | (0.32) | Hypophy- sis | 2 | (0.18) | Hypophy- sis | 1 | |
| 32 | Testis | 4 | (0.25) | Nose | 2 | (0.18) | Mouth | 1 | |
| 33 | External genital gland | 4 | (0.25) | Perito- neum | 1 | | Nose | 1 | |
| 34 | Mouth-lip | 4 | (0.25) | Not clear | 7 | | Not clear | 2 | |
| 35 | Hypophy- sis | 3 | (0.19) | | | | | | |
| 36 | Nose | 3 | (0.19) | | | | | | |
| 37 | Perito- neum | 1 | | | | | | | |
| 38 | Ileum | 1 | | | | | | | |
| 39 | Not clear | 9 | | | | | | | |
| Total | | 1,579 | | 1104 | | | 475 | | |
| Number of dissections | | 12,077 * | | 7,710 | | | 4,356 | | |

Table C IV brings out the following points:

Gastric cancer. In male as well as in female, gastric cancer ranks first as to frequency. The actual number in the male is 526, which is 47.73% of the total cancers in the male. In the female the actual number is 148 (31.09%), being considerably larger in number than the cancer of the second rank. In male and female

*Not clear 11.

combined, gastric cancer amounts to over 42% of total cancers.

Uterine cancer. Due to the nature of the cases coming to autopsy at our Institute, the number of uterine cancers is comparatively small, and yet it holds second rank in the female with 68 (14.3%). In both sexes combined it falls to the fifth rank.

Hepatic cancer. The abundance of hepatic cancers, mostly hepatomas, is noteworthy. In the male with 86 (7.8%), and in both sexes combined with 106 (6.7%), it ranks second as to frequency. In the female it takes the sixth place, but even here it ranks above rectal, mammary, oesophageal and other cancers. This situation is totally different from the conditions in Europe and America, and offers an important problem for further investigation.

Oesophageal cancer. The third place, following hepatic cancer, is taken by oesophageal cancer in male and in both sexes combined. It has been generally known that oesophageal cancer is far more frequent in the male than in the female, and in this table, in contrast to the second rank in male with 70 (6.35%), in female it ranks ninth with 16 (3.3%), showing a decisive difference.

Lung cancer. In male, female, and in both sexes combined, lung cancer holds fourth rank, demanding attention as one of the important cancers of internal organs. In every sex group it constitutes more than 5% of the total cancers. It seems to be definitely recognizable that lung cancers have definitely increased in recent years. We shall return to this subject later in this paper.

Cancer of gall-bladder. This form of cancer ranks third in the female with 32 (6.72%) but in the male it occupies the seventh rank, amounting only to 2.9% of the total cancers. Cancer of the gall-bladder, like thyroid gland cancer, is more frequent in female than in male.

Cancers of upper jaw, rectum, bile-duct, etc., are all fairly abundant. Cancers of duodenum and of pancreas seem to show tendencies for increase in recent years.

That *mammary cancer* ranks eighth in the female with only

18 (3.78%) is due to the fact that this form of cancer is for the most part treated surgically, and that autopsy cases coming from Surgical Clinics are in a small number. Moreover, there has been

Table C V.

Material of the Pathological Institute, Tokyo Imperial University, classified according to the International System.

| Group Nos. | Organs | Total | Males | Females |
|------------|--------------|----------------|----------------|----------------|
| 43 | Oral cavity | 6 | 5 | 1 |
| | Tongue | 24 | 20 | 4 |
| | Pharynx | 8 | 7 | 1 |
| | Upper jaw | 46 | 36 | 10 |
| | Lip | 4 | 4 | 0 |
| | | 88 (5.6%) | 72 (6.6%) | 16 (3.4%) |
| 44 | Oesophagus | 86 | 70 | 16 |
| | Stomach | 674 | 526 | 148 |
| | Liver | 106 | 86 | 20 |
| | Gall-bladder | 65 | 83 | 32 |
| | Bile-ducts | 44 | 34 | 10 |
| | | 975 (62.1%) | 749 (68.4%) | 226 (47.7%) |
| 45 | Peritoneum | 1 | 1 | 0 |
| | Duodenum | 25 | 18 | 7 |
| | Ileum | 1 | 0 | 1 |
| | Caecum | 16 | 9 | 7 |
| | Colon | 8 | 5 | 3 |
| | Rectum | 51 | 31 | 20 |
| | | 102 (6.5%) | 64 (5.8%) | 38 (8.0%) |

| Group Nos. | Organs | Total | Males | Females |
|------------|-----------------|----------------|----------------|----------------|
| 46 | Ovary | 22 | | 22 |
| | Uterus | 68 | | 68 |
| | Vagina | 10 | | 10 |
| | | 100 (5.4%) | | 100 (20.9%) |
| 47 | Mamma | 23 (1.4%) | 5 (0.5%) | 18 (3.7%) |
| 48 | Skin | 13 | 10 | 3 |
| | Penis | 10 | 10 | 0 |
| | | 23 (1.4%) | 20 (1.9%) | 3 (0.7%) |
| 49 | Larynx | 17 | 15 | 2 |
| | Trachea | 6 | 5 | 1 |
| | Lung | 86 | 59 | 27 |
| | Pleura | 11 | 6 | 5 |
| | Pancreas | 41 | 30 | 11 |
| | Kidney | 19 | 15 | 4 |
| | Adrenals | 16 | 12 | 3 |
| | Urinary bladder | 20 | 17 | 3 |
| | Prostate | 5 | 5 | 0 |
| | Testicle | 4 | 4 | 0 |
| | Thyroid | 13 | 4 | 9 |
| | Hypophysis | 3 | 2 | 1 |
| | Neck | 10 | 7 | 3 |
| | Thymus | 5 | 3 | 2 |
| | Nasal cavity | 3 | 2 | 1 |
| | | 259 (16.2%) | 187 (17.1%) | 72 (15.4%) |
| | | 1570* | 1097 | 473 |

*Not clear: males 7, females 2.

an appreciable improvement in the results of surgical treatment of mammary gland cancer.

I shall make no comment on various other cancers, and the reader is referred to the tables for data concerning them. However, it should be added here as of special interest that prostate cancer is exceedingly rare, and the enlargement of the prostate gland is also infrequent in Japan, which is in striking contrast to the abundance of these conditions in Europe and America.

In order to facilitate the comparison of Table C IV and Tables A V and VI, and B X, the data have been reclassified in accordance with the International system, as represented by Table C V.

As may be seen from the above table, our autopsy statistics agree with A V as well as with B IX in that the category No. 44 includes more than fifty per cent of all cancers, showing especially high rate in the male. The points of marked difference consist of No. 46 (cancer of female genital organs) and No. 47 (mammary cancer), both of which are rated very much lower in C V than in A V, to say nothing of B X. Another difference is seen in No. 49, which has a considerably higher rate in C than in A or B.

The low figures for Nos. 46 and 47 are due to the scarcity of autopsy cases coming from gynecological or surgical clinics, while the high figures for No. 49 are explainable on the ground that all the internal cancers of lung, bladder, pharynx, kidney, suprarenal glands, and other parts of the respiratory and urinary systems are included under this category. The fact that among these are some of the cancers that are very difficult to diagnose clinically is also a contributing factor for this discrepancy.

CHAPTER III.

COMPARISON OF THE NUMBER OF CANCERS IN VARIOUS ORGANS
IN EARLY AND LATER PERIODS OF THE PATHOLOGICAL
INSTITUTE, TOKYO IMPERIAL UNIVERSITY.

Before entering into the comparison of the frequency of cancers in various organs during the early (1894-1914) and later (1915-1932) periods, a complete tabulation of 767 cancer cases dealt with during the later period may be presented, noting sex, age, and site of cancer development. This tabulation (Table C VI) serves as the source of various cancer statistics for this period.

We now proceed to the comparison of early and later periods. (See Tables C II and III.)

A. *Organs showing Increase of Cancer in Later Period.*

1. In the male: lung, pancreas, duodenum, suprarenal gland, kidney, liver, skin.
2. In the female: lung, duodenum, pancreas, mammary gland, thymus, skin, colon, urinary bladder.
3. In both sexes combined: lung, kidney, pancreas, duodenum, suprarenal gland, skin, urinary bladder.

B. *Organs showing Decrease of Cancer in Later Period.*

1. In the male: oesophagus, rectum, upper jaw, tongue, penis, mouth cavity, thyroid gland.
2. In the female: uterus, gall-bladder, rectum, ovary, oesophagus, upper jaw, appendix, thyroid gland, tongue.
3. In both sexes combined: oesophagus, rectum, uterus, penis, mouth cavity, thyroid gland.

C. *Organs showing no Marked Change in Cancer Rate between the Two Periods.*

1. In the male: stomach, bile-duct, urinary bladder, appendix, prostate gland, pharynx, larynx, etc.

Some remarks may be made regarding a few of the organs showing most marked changes in cancer rate.

The statistics of various countries all agree in showing an

| Organs | | | | | | | | | | | | | | | |
|--------------|--------|---------|-------|--------------|---------|-------|---------|---------|-------|------------|---------|-------|---------|---------|-------|
| | Tongue | | | Mouth cavity | | | Pharynx | | | Oesophagus | | | Stomach | | |
| Sex Age | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total |
| 0—5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6—10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11—15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16—20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 21—25 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 |
| 26—30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 | 4 | 9 |
| 31—35 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 10 | 7 | 17 |
| 36—40 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 19 | 7 | 26 |
| 41—45 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 0 | 4 | 25 | 17 | 42 |
| 46—50 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 41 | 9 | 50 |
| 51—55 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 44 | 9 | 53 |
| 56—60 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 2 | 7 | 40 | 5 | 45 |
| 61—65 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 30 | 7 | 37 |
| 66—70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 13 | 4 | 17 |
| 71—75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 3 | 9 |
| 76—80 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 4 |
| Over 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Undetermined | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 5 |
| Total | 7 | 1 | 8 | 1 | 0 | 1 | 4 | 1 | 5 | 26 | 4 | 30 | 242 | 77 | 319 |

Digestive System

| as | Stomach | | | Duodenum | | | Ileum | | | Caecum | | | Colon | | | Sigmoidium | | |
|----|---------|---------|-------|----------|---------|-------|-------|---------|-------|--------|---------|-------|-------|---------|-------|------------|---------|-------|
| | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 1 | 5 | 4 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 10 | 7 | 17 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 0 | 0 |
| 2 | 19 | 7 | 26 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 25 | 17 | 42 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 2 | 0 | 0 | 0 |
| 2 | 41 | 9 | 50 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 44 | 9 | 53 | 5 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 40 | 5 | 45 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 30 | 7 | 37 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 3 | 13 | 4 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1 | 6 | 3 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 3 | 1 | 4 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 3 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 242 | 77 | 319 | 13 | 5 | 18 | 0 | 1 | 1 | 5 | 1 | 6 | 4 | 1 | 5 | 1 | 2 | 3 |

Total Ca
Classified

| | | | Digestive Glands, | | | | | | | | | | | | | | |
|--------|---------|-------|-------------------|---------|-------|--------------|---------|-------|-----------|---------|-------|----------|---------|-------|--------------|---------|-------|
| Rectum | | | Liver | | | Gall bladder | | | Bile duct | | | Panereas | | | Nasal cavity | | |
| Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total |
| 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 5 | 1 | 6 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 5 | 1 | 6 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 0 | 0 | 0 | 7 | 1 | 8 | 2 | 1 | 3 | 1 | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 1 |
| 0 | 0 | 0 | 9 | 2 | 11 | 4 | 5 | 9 | 1 | 0 | 1 | 3 | 2 | 5 | 0 | 0 | 0 |
| 0 | 1 | 1 | 7 | 0 | 7 | 2 | 2 | 4 | 5 | 2 | 7 | 3 | 2 | 5 | 0 | 0 | 0 |
| 1 | 0 | 1 | 6 | 1 | 7 | 1 | 0 | 1 | 5 | 1 | 6 | 5 | 2 | 7 | 0 | 0 | 0 |
| 0 | 0 | 0 | 2 | 0 | 2 | 5 | 4 | 9 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 |
| 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 1 | 2 | 1 | 3 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 3 | 7 | 44 | 9 | 53 | 18 | 13 | 31 | 17 | 5 | 22 | 18 | 10 | 28 | 1 | 1 | 2 |

Table C VI.

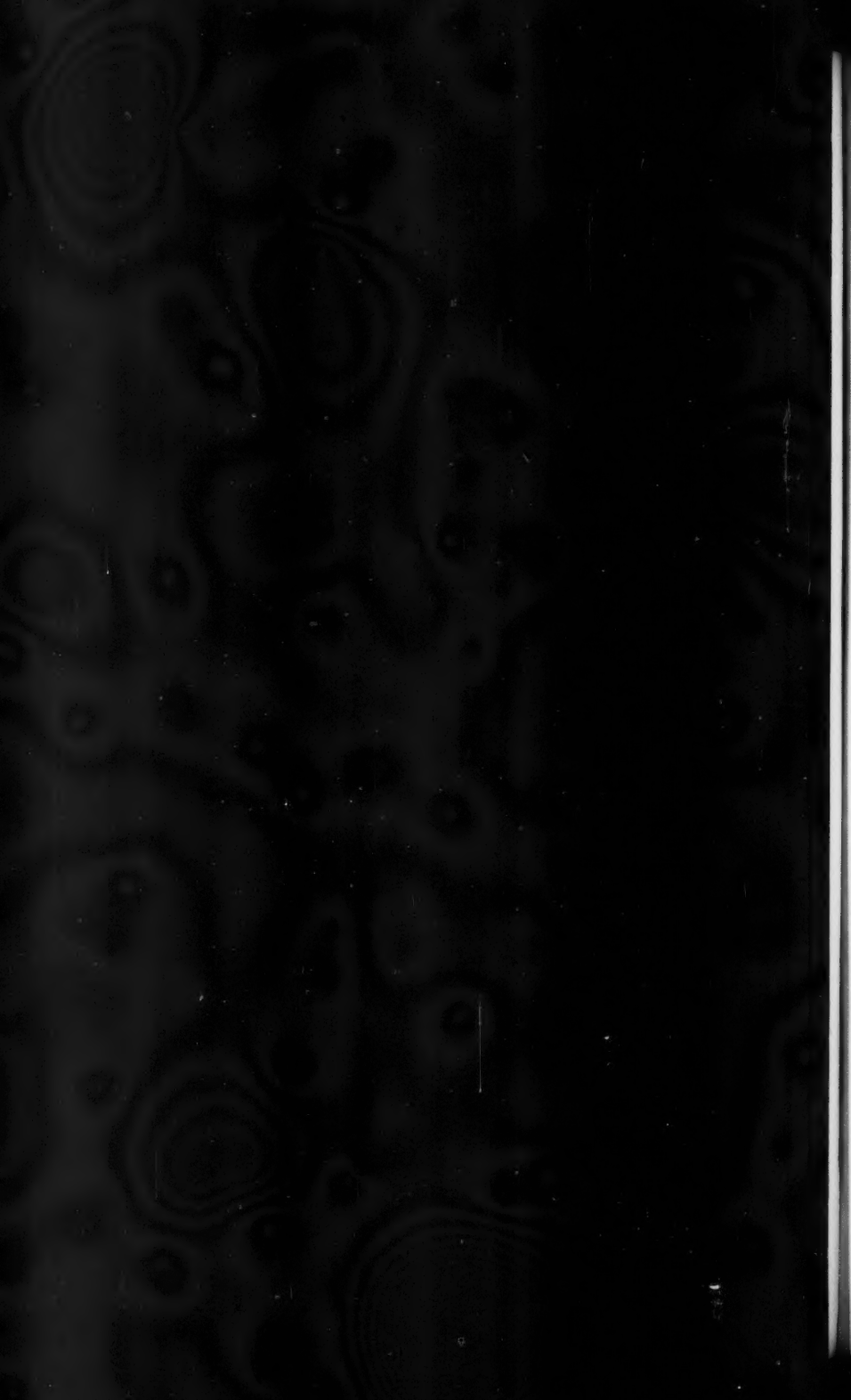
Total Cancer Cases of the Late Period of Pathological Institute of Tokyo Imperial University (1915-1932),
Classified according to Organs, Sex and Age Groups, and their Ratios to the Total Number of Autopsies.

| | | Digestive Glands, | | | | | | | | | | | | Respiratory Organs | | | | | | | | | | | | | | | Urinary Organs | | | | | | Reproductive Organs | | | | | | | | | | Endocrine Glands | | | | | | | | | | | |
|---------|---------|-------------------|-------|---------|--------------|-------|---------|-----------|-------|---------|----------|-------|---------|--------------------|-------|---------|-----------|-------|---------|--------|-------|---------|---------|-------|---------|-------|-------|---------|----------------|-------|---------|---------|-------|---------|---------------------|----------|---------|-------|--------|---------|-------|---------------|---------|-------|------------------|---------|-------|--------|---------|-------|---------|---|---|------------|---|--|
| Stomach | | Liver | | | Gall bladder | | | Bile duct | | | Pancreas | | | Nasal cavity | | | Upper jaw | | | Larynx | | | Bronchi | | | Lung | | | Kidney | | | Bladder | | | Testicle | Prostate | Penis | Ovary | Uterus | Vagina | Vulva | Mammary gland | | | Suprarenal gland | | | Thymus | | | Thyroid | | | Hypophysis | | |
| Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | | | | | | |
| 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 12 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 5 | 1 | 6 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 1 | 5 | 1 | 6 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 6 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 4 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | | | | |
| 0 | 0 | 7 | 1 | 8 | 2 | 1 | 3 | 1 | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 1 | 5 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 9 | 2 | 11 | 4 | 5 | 9 | 1 | 0 | 1 | 3 | 2 | 5 | 0 | 0 | 0 | 5 | 1 | 6 | 0 | 1 | 1 | 2 | 0 | 2 | 5 | 1 | 6 | 3 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | | |
| 1 | 1 | 7 | 0 | 7 | 2 | 2 | 4 | 5 | 2 | 7 | 3 | 2 | 5 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 3 | 0 | 0 | 0 | 5 | 1 | 6 | 2 | 0 | 2 | 5 | 0 | 5 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 1 | 6 | 1 | 7 | 1 | 0 | 1 | 5 | 1 | 6 | 5 | 2 | 7 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | | | |
| 0 | 0 | 2 | 0 | 2 | 5 | 4 | 9 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 7 | 11 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | | | | |
| 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 1 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 4 | 6 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 3 | 7 | 44 | 9 | 53 | 18 | 13 | 31 | 17 | 5 | 22 | 18 | 10 | 28 | 1 | 1 | 2 | 13 | 2 | 15 | 5 | 2 | 7 | 4 | 1 | 5 | 35 | 18 | 53 | 14 | 2 | 16 | 10 | 2 | 12 | 4 | 2 | 3 | 9 | 27 | 2 | 2 | 1 | 10 | 11 | 10 | 2 | 12 | 3 | 2 | 5 | 1 | 3 | 4 | 2 | 1 | |

University (1915-1932),
Total Number of Autopsies.

| | | Reproductive Organs | | | | | | | | Endocrine Glands | | | | | | | | Serous Membrane | | | | | | External Surfaces | | | | | | Other Organs | | | | | | Total Cancers for Age Groups | | | Total Autopsies for Age Groups | | | Ratios of Cancers against total Autopsies for Age Groups. | | | |
|--------------|----------|---------------------|-------|-------|---------|---------|---------|---------------|-------|------------------|------------------|-------|---------|--------|-------|---------|---------|-----------------|---------|------------|-------|---------|------------|-------------------|---------|--------|-------|---------|-------|--------------|---------|-------|-------|---------|----------------------|------------------------------|---------|-------|--------------------------------|---------|--------------|---|--|--|--|
| Bladder | Testicle | Prostate | Penis | Ovary | Uterus | Vagina | Vulva | Mammary gland | | | Suprarenal gland | | | Thymus | | | Thyroid | | | Hypophysis | | | Peritoneum | | | Pleura | | | Skin | | | Lip | | | Neck, Branchiogenic. | | | | | | | | | | |
| Age | Total | Males | Males | Males | Females | Females | Females | Females | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Males | Females | Total | Sex Age | | | |
| 0-5 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0-5 | | | | |
| 6-10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6-10 | | | | |
| 11-15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11-15 | | | | |
| 16-20 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16-20 | | | | |
| 21-25 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21-25 | | | | |
| 26-30 | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26-30 | | | | |
| 31-35 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31-35 | | | | |
| 36-40 | 1 | 0 | 0 | 1 | 1 | 4 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36-40 | | | | |
| 41-45 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41-45 | | | | |
| 46-50 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46-50 | | | | |
| 51-55 | 5 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51-55 | | | | |
| 56-60 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56-60 | | | | |
| 61-65 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61-65 | | | | |
| 66-70 | 2 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66-70 | | | | |
| 71-75 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71-75 | | | | |
| 76-80 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 76-80 | | | | |
| Over 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Over 81 | | | | |
| Undetermined | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Undetermined | | | | |
| Total | 12 | 4 | 2 | 3 | 9 | 27 | 2 | 2 | 1 | 10 | 11 | 10 | 2 | 12 | 3 | 2 | 5 | 1 | 3 | 4 | 2 | 1 | 3 | 1 | 0 | 1 | 6 | 5 | 11 | 9 | 3 | 12 | 2 | 0 | 2 | 4 | 3 | 7 | 3 | 0 | 3 | Total | | | |





increase of lung cancer in recent years, and the increase of this form of cancer seems to be definitely recognizable also in Japan. Concerning this point, Tetsuo Suzuki has recently made a special study (Gann, vol. 27, Nos. 2 and 3, 1933) based on the material available at our Pathological Institute, and his results also confirm the increase of lung cancer.

The increase in the later period of the cancers of duodenum, pancreas, suprarenal gland, kidney, thymus and other internal organs attracts attention. Even if we do not accept the figures presented unreservedly, it seems undeniable that there are some actual increases. The recent progress in the study of anatomical and histological diagnosis is partly responsible for this result, however. Some of these cancers of internal organs often show such active proliferation and invade surrounding tissues to such an extent that the determination of the site of their origin is rendered exceedingly difficult.

The most striking among those showing decrease is rectal cancer, but in view of the statistics presented in Part II it is impossible to consider that the rectal cancers have actually decreased. There has been a considerable increase in the number of surgically treated rectal cancers, which are now being transferred from internal to surgical fields, with the resultant decrease of deaths from rectal cancer in internal clinics. This, coupled with the fact that few autopsy cases come from surgical clinics anyhow, is sufficient to constitute the main reason for the decrease of rectal cancers in the later period.

What is the cause of the decrease of oesophageal cancer, both in male and in female? It seems certain that *sake* drinking has a causal relation to oesophageal cancer. It would be felicitous if the observed decrease of this form of cancer is real. Among other cancers, those of upper jaw, tongue, penis, thyroid gland, mouth cavity, ovary, etc., are showing decrease in the later period, and it seems probable that the early detection and improved surgical and

other methods of treatment may in part account for this phenomenon. The decrease of cancer of larynx, appendix, etc., may also be explained on similar grounds, but it must be remembered that these cancers fall in surgical and oto-rhinological clinics, which habitually supply few autopsy cases.

Cancers not recorded in the early period but found in the later period are those of hypophysis cerebri, thymus, peritoneum, testicle, ileum, etc.

CHAPTER IV.

COMPARISON OF THE STATISTICS OF OUR INSTITUTE
AND OF SOME NATIVE AND FOREIGN INSTITUTES.

There exist many statistics based on autopsy material in foreign countries, and Ishibashi, Takatsu and Suzuki have given in their publications reference to the earlier literature. However, comparatively small numbers of statistics for recent years seem available. I found the following seven reports in readily available journals, and shall use them for the purpose of comparison here. Of these reports, those for Dresden and for Leningrad are based on especially rich materials and offer the best source of information. It is probable that there may be other valuable publications on this subject, and it is requested that the authors of such will kindly send me their reprints. A comparison of the statistics of various countries based on autopsy material should be of deep significance in the study of the cause of cancer.

In Tables C VII, C VIII and C IX are shown in actual number and in ratio the relative frequency of cancer in various organs

A list of statistics made use of in this Chapter is as follows:—

S. Ohno: Statistical observations for 11 years since the foundation of our institute (Japanese). *Fukuoka Acta Medica* Vol. 9, 1916.

N. Suzuki: Statistical study on malignant tumors in Japan (Japanese). *Kyoto Medical Journal*, Vol. 18, 1921.

Tanaka: Statistical study on malignant tumors (Japanese). *Gann*, Vol. 28, No. 1, 1934.

H. Junghans. Eine Krebsstatistik über 35 Jahre (4192 Carcinome bei 36408 Leichenöffnungen), Dresden. *Zeit. f. Krebs*. Bd. XXIX, 1929.

W. Egenolf. Über die in den Jahren 1921–1927 von Göttinger Patholog-
Institut beobachteten bösartig. Geschwülste. *Zeit. f. Krebs*, Bd. XXXI, 1930.

Ch. Harms. Statistik d. malign. Tumoren nach dem Sektionsmaterial
der Jahre 1919–1928 (Kiel) *Z. f. Krebs*. XXXIII 1931.

M. N. Wilinski. Material z. Statistik der Krebs nach dem Daten d.
Obduction der Krankenanstalten in Leningrad für 25 Jahre. *Z. f. Krebs*. XXXI,
1930.

H. G. Wells. Cancer statistics as they appear to a pathologist. *Jour.*
Amer. Med. Assoc., 1927.

K. v. Wolff. Neuere Daten zur Krebsstatistik. *Zeit. f. Krebs*, Bd. XXXI,
1930.

Table
Comparison of

| | Tokyo 1894-1932 (Nagayo) Number % | Fukuoka 1905-1915 (Ohno) Number % | Kyoto 1901-1915 (Suzuki) Number % | Niigata 1912-1932 (Tanaka) Number % | Dresden I. (Kranken- haus) 1893-1927 (Junghans) Number % |
|----------------------------|--|--|--|--|---|
| 1 | Stomach 526 (47.64) | Stomach 107 (44.01) | Stomach 96 (41.6) | Stomach 47 (39.4) | Stomach 573 (33.57) |
| 2 | Liver 86 (7.79) | Liver 49 (2.02) | Oesophagus 24 (10.3) | Lung 11 (9.2) | Oesophagus 290 (16.99) |
| 3 | Oesophagus 70 (6.34) | Oesophagus 20 (8.2) | Liver 20 (8.7) | Liver 10 (8.4) | Lung 250 (14.65) |
| 4 | Lung 59 (5.34) | Intestine 18 (7.4) | Rectum 15 (6.5) | Oesophagus 9 (7.6) | Rectum 118 (6.9) |
| 5 | Upper jaw 36 (3.26) | Lung 8 (3.3) | Upper jaw 9 (3.9) | Rectum 7 (5.9) | Colon 111 (6.50) |
| 6 | Bile-duct 34 (3.08) | Tongue 6 (2.5) | Pancreas 9 (3.9) | Gall-bladder 6 (5.0) | Mouth 59 (3.46) |
| 7 | Gall-bladder 33 (2.99) | Bile-duct 5 (2.0) | Pharynx 6 (2.6) | Bile-duct 5 (4.4) | Prostate 58 (3.39) |
| 8 | Rectum 31 (2.81) | Pancreas 4 (1.6) | Tongue 5 (2.2) | Colon 4 (3.4) | Pancreas 48 (2.81) |
| 9 | Pancreas 30 (2.71) | Skin 4 (1.6) | Lung 5 (2.2) | Pancreas 3 (2.5) | Uri. passage 36 (2.11) |
| 10 | Tongue 20 (1.81) | Upper jaw 4 (1.6) | Gall-bladder 4 (1.7) | Uri. bladder 3 (2.5) | Gall-bladder 34 (1.99) |
| 11 | Duodenum 18 (1.63) | Uri. bladder 4 (1.6) | Neck 3 (1.3) | Skin 2 (1.7) | Liver 24 (1.41) |
| 12 | Uri. bladder 17 (1.54) | Penis 4 (1.6) | Pleura 3 (1.3) | Duodenum 2 (1.7) | Bile-duct 14 (0.76) |
| 13 | Larynx 15 (1.36) | Gall-bladder 3 (1.2) | Mouth cavity 3 (1.3) | Upper jaw 2 (1.7) | Skin 12 (0.70) |
| 14 | Kidney 15 (1.36) | Pharynx 2 (0.8) | Bile-duct 3 (1.3) | Nasal cavity, Thyroid, Mediastinum, Larynx, Tongue, Mouth cavity, Retroperito- neum, each 1 | Duodenum 12 (0.70) |
| 15 | Adrenals 13 (1.18) | Thyroid gland 2 (0.8) | Skin 3 (1.3) | | Kidney 11 (0.65) |
| 16 | Skin 10 (0.91) | Lower jaw 2 (0.8) | Prostate 3 (1.3) | | Thyroid gland 11 (0.65) |
| 17 | Penis 10 (0.91) | Prostate 2 (0.8) | Uri. bladder 2 (0.9) | | Testicle 3 (0.17) |
| 18 | Prostate 5 (0.45) | Bronchi 1 (0.4) | Retro- peritoneum 2 (0.9) | | Penis 2 (0.12) |
| 19 | Breast 5 (0.45) | | Kidney, Larynx, Penis, and Testicle, each 1. (0.4) | | Miscellaneous 42 (2.45) |
| 20 | | | | | |
| Total | 1, 104 (14.3%) | 243 (18.9%) | 231 | 119 (13.0%) | 1707 |
| Post- mortem numbers | 7, 710 | 1, 286 | | | 13, 215 |

C VII.

Cancers in Male.

| Dresden II. (Pflegenanstalt) 1903-1927 (Junghans) Number % | Göttingen 1921-1927 (Egenolf) Number % | Kiel 1918-1928 (Harms) Number % | Leningrad 1900-1924 (Wilinski) Number % | Budapest 1925-1929 (Wolff Gaal) Number % |
|--|---|--|--|---|
| Stomach 85 (28.05) | Stomach 50 (39.7) | Stomach 109 (41.1) | Stomach 2124 (49.2) | Stomach 60 (27.2) |
| Lung 47 (15.51) | Prostate 12 (9.5) | Rectum 26 (10.8) | Oesophagus 1124 (25.9) | Uri. bladder 30 (13.6) |
| Rectum 45 (14.85) | Rectum 10 (8.0) | Oesophagus 22 (9.1) | Lung 192 (4.4) | Colon 22 (10.0) |
| Oesophagus 40 (13.20) | Oesophagus 9 (7.16) | Lung and Bronchi 19 (7.9) | Pancreas 110 (2.5) | Cheek 14 (6.3) |
| Prostate 19 (6.27) | Lung and Bronchi 7 (5.7) | Colon 12 (4.9) | Larynx 78 (1.8) | Oesophagus 13 (5.9) |
| Mouth 12 (3.96) | Colon 5 (4.0) | Prostate 9 (3.7) | Liver 78 (1.8) | Pancreas 13 (5.9) |
| Skin 10 (3.30) | Larynx 5 (4.0) | Upper air-passage 8 (3.3) | Uri. bladder 76 (1.76) | Larynx 13 (5.9) |
| Colon 9 (2.97) | S. romanum 5 (4.0) | Uri. bladder 7 (2.9) | Caecum 64 (1.5) | Rectum 12 (5.4) |
| Uri. passage 6 (1.98) | Gall-bladder 3 (2.38) | Pancreas 6 (2.5) | Rectum 58 (1.3) | Liver 10 (5.0) |
| Pancreas 4 (1.32) | Bile-duct 3 (2.38) | Bile-duct 3 (1.2) | Tongue 50 (1.15) | Prostate 10 (5.0) |
| Liver 4 (1.32) | Uri. bladder 3 (2.38) | Gall-bladder 2 (0.9) | Duodenum 45 (1.05) | Lung 5 (2.3) |
| Gall-bladder 3 (0.99) | Liver 3 (2.38) | Duodenum 2 (0.9) | Lip 37 (0.85) | Tongue 4 (1.8) |
| Thyroid gland 3 (0.99) | Pancreas 2 (1.58) | Liver 1 (0.4) | Skin 35 (0.80) | Thyroid gland 4 (1.8) |
| Duodenum 2 (0.66) | Kidney 2 (1.58) | Penis 1 (0.4) | Larynx 34 (0.80) | Mouth 2 (0.9) |
| Kidney 2 (0.66) | Mammary gland 1 (0.79) | | Prostate 29 (0.7) | Lip 2 (0.9) |
| Testicle 2 (0.66) | Tongue 1 (0.79) | | Kidney 22 (0.5) | Gall-bladder 2 (0.9) |
| Penis 1 (0.33) | Thyroid gland 1 (0.79) | | Adrenals 21 (0.5) | Kidney 2 (0.9) |
| Bile-duct 1 (0.33) | Caecum 1 (0.79) | | Gall-bladder 20 (0.5) | Intestine 1 (0.5) |
| Miscellaneous 7 (2.31) | Nose 1 | | Bile-duct 17 (0.5) | Bronchi 1 (0.5) |
| | Seminal vesicle 1 (not clear 1) | | Testicle 2 (0.05) | |
| 303 | 129 | 241 | 4,331 | 221 |
| 3,231 | | | | 1,587 |

classified according to sex groups, as ascertainable for different cities. For cities in Japan, outside of Tokyo, statistics by Ohno (Fukuoka), Suzuki (Kyoto) and Tanaka (Niigata) were used.

Gastric cancer is ranking first in all the cities. The highest ratio is found in Leningrad with 2,124 (49.2%), followed by Tokyo (47.64%) and Fukuoka (44%). Budapest (27.2%) shows the lowest ratio preceded by Dresden II (28.05%).

Oesophageal cancer ranks second in four cities (Kyoto, Dresden I, and Leningrad), third in three cities (Tokyo, Fukuoka and Kiel), fourth in three cities (Niigata, Dresden II, and Göttingen) and fifth in one city (Budapest). On an average it is the second commonest cancer next to gastric cancer. The ratio of oesophageal cancer to gastric cancer differs markedly according to the cities. In Leningrad it numbers 1,124 (25.9%), being more than half the number of gastric cancers. In Dresden I with 290 (16.99%), it amounts to about half the number of gastric cancers. In Tokyo oesophageal cancer amounts to less than one-seventh of gastric cancer, with only 70 (6.34%). This differs much from the ratios of one-fifth for Fukuoka and Niigata and of one-fourth for Kyoto. Even in Germany the ratio for Kiel is less than one-fifth, however.

Rectal cancer ranks between second to fourth in four German cities, but in Tokyo it is placed considerably lower according to this table. This discrepancy is accounted for by the type of the available autopsy material, as fully discussed in Chapter I. In Kyoto it ranks fourth, and in Niigata fifth. In Fukuoka the rectal cancer is counted together with intestinal cancers, and it is impossible to find how many rectal cancers are included.

Lung cancer takes second rank in two cities (Niigata and Dresden I), third rank in two (Dresden II and Leningrad), fourth rank in two (Tokyo and Kiel) and fifth rank in three, and seems to be fairly common in all cities. Budapest is exceptional in that lung cancer takes the eleventh rank there. In Kyoto ninth rank is held by lung cancer.

Liver cancer. In Tokyo and in Fukuoka hepatic cancer ranks second next to gastric cancer. In Kyoto and Niigata it holds third rank. This is an extraordinary phenomenon when compared with the condition in four German cities, where liver cancer takes as low a position as from tenth to twelfth, with the actual total number of only 32. In two cities in Russia, liver cancer takes third and seventh places respectively, which is somewhat higher than in Germany but is considerably lower than in Japan. In Budapest it ranks ninth, with the ratio of about 5%.

Prostate cancer. In the male, prostate cancer is common in Germany, and it ranks second in Göttingen and fifth, sixth and seventh respectively in three other cities. A total of 98 cases is recorded for the four cities. In striking contrast to this state of affairs, only 8 cases in all of prostate cancer are recorded for Tokyo, Fukuoka and Kyoto, where it ranks eighteenth, seventeenth and sixteenth respectively. No prostate cancer is recorded for Niigata. The condition in Russia is nearer to that of Japan than of Germany in this respect also, and prostate cancer takes fifteenth place with 29 (0.7%). In Budapest it ranks tenth with 10 (5.0%), being about the same as hepatic cancer.

Cancer of the mouth cavity is common in two cities in Germany.

It is extraordinary in the above table that in Budapest cancer of urinary bladder takes second rank with 30 (13.6%) and cancer of cheek the fourth rank with 14 (6.3%). According to Wolff and Beren, however, these two forms of cancer are not especially abundant in Budapest.

Comparison of cancer in Female.

Gastric cancer ranks first in all the cities excepting Kyoto and Dresden II, Niigata showing the highest ratio with 40% and Dresden II the lowest with 12.92%. Tokyo shows the third highest ratio with 31%, Kyoto ninth (26%) and Fukuoka sixth (27.1%).

Uterine cancer. This occupies the first rank in three cities, second rank in five, third in two. Taking all in all this is the

Table
Comparison of

| | Tokyo 1894-1932 (Nagayo) Number % | Fukuoka 1905-1915 (Ohno) Number % | Kyoto 1901-1915 Suzuki Number % | Niigata 1912-1932 Tanaka Number % | Dresden I. (Krankenhaus) 1893-1927 (Junghans) Number % |
|-------------------------|--|--|--|--|--|
| 1 | Stomach 148 (31.11) | Stomach 26 (27.1) | Uterus 44 (29.3) | Stomach 34 (40.0) | Stomach 394 (27.94) |
| 2 | Uterus 68 (14.32) | Uterus 25 (26.0) | Stomach 39 (26.0) | Uterus 15 (17.6) | Uterus 288 (20.43) |
| 3 | Gall-bladder 32 (6.74) | Ovary 9 (9.4) | Mammary gland 11 (7.3) | Gall-bladder 7 (8.2) | Mammary gland 116 (8.23) |
| 4 | Lung 27 (5.68) | Intestine 9 (9.4) | Ovary 10 (6.7) | Ovary 7 (8.2) | Gall-bladder 93 (6.66) |
| 5 | Ovary 22 (4.63) | Gall-bladder 7 (7.3) | Rectum 9 (6.0) | Liver 4 (4.7) | Large intestine 92 (6.52) |
| 6 | Liver 20 (4.21) | Liver 6 (6.2) | Upper jaw 6 (4.0) | Mammary gland 4 (4.7) | Ovary 80 (5.58) |
| 7 | Rectum 20 (4.21) | Mammary gland 4 (4.2) | Intestine 5 (3.3) | Lung 2 (2.3) | Rectum 75 (5.32) |
| 8 | Mammary gland 18 (3.79) | Pancreas 4 (4.2) | Pancreas 4 (2.7) | Bile-duct 2 (2.3) | Trachea 55 (3.90) |
| 9 | Oesophagus 16 (3.37) | Skin 2 (2.1) | Gall-bladder 3 (2.0) | Skin 2 (2.3) | Oesophagus 32 (2.97) |
| 10 | Pancreas 11 (2.32) | Upper jaw 1 (1.0) | Thyroid 3 (2.0) | Rectum, Pancreas, Urinary bladder, Duodenum, Pelvis, Vulva Anus each 1 | Bile-duct 27 (1.92) |
| 11 | Bile-duct 10 (2.11) | Oesophagus 1 (1.0) | Neck 3 (1.4) | | Pancreas 20 (1.42) |
| 12 | Upper jaw 10 (2.11) | Uri. bladder 1 (1.0) | Tongue 2 (1.4) | | Vagina 18 (1.28) |
| 13 | Thyroid 9 (1.89) | Larynx 1 (1.0) | Lung 2 (1.4) | | Thyroid 17 (1.21) |
| 14 | Duodenum 7 (1.47) | Thyroid 1 (1.0) | Omentum 2 (1.4) | | Urethra 13 (0.92) |
| 15 | Caecum 7 (1.47) | Omentum 1 (1.0) | | | Skin 13 (0.92) |
| 16 | Vagina 6 (1.26) | Thyroid 1 (1.0) | Pharynx, Thymus, Oesophagus, Mouth cavity, Lower jaw, Liver, Pleura Vulva each 1 | | Mouth cavity 9 (0.64) |
| 17 | Adrenals 3 (0.63) | etc | | | Small intestine 8 (0.57) |
| 18 | etc | | | | Liver 7 (0.57) etc |
| Total | 475 (10.9%) | 96 (13.1%) | 150 | 85 (14.4%) | 1,410 |
| Total Autop- sies | 4,356 | 731 | | | 10,879 |

C VIII.

Cancer in Female.

| Dresden 11. (Pflegeanstalt) 1903-1927 (Junghans) Number % | Göttingen 1921-1927 (Egenolf) Number % | Kiel 1919-1928 (Harms) Number % | Leningrad 1900-1924 (Wilinski) Number % | Budapest 1925-1929 (Wolff-Gall) Number % |
|---|---|--|--|---|
| Uterus 320 (41.78) | Stomach 14 (18.2) | Stomach 48 (26.2) | Stomach 1129 (39.5) | Uterus 87 (35.7) |
| Mammary gland 107 (13.97) | Uterus 14 (18.2) | Mammary gland 34 (18.6) | Oesophagus 401 (14.4) | Stomach 36 (15.1) |
| Stomach 99 (12.92) | Gall-bladder 13 (17.0) | Uterus 27 (14.6) | Uterus 380 (13.4) | Mammary gland 21 (8.8) |
| Rectum 33 (4.31) | Rectum 8 (10.4) | Rectum 15 (8.1) | Mammary gland 141 (4.9) | Large intestine 14 (5.9) |
| Ovary 31 (4.05) | Mammary gland 6 (7.8) | Large intestine 10 (5.4) | Ovary 136 (4.8) | Rectum 14 (5.9) |
| Gall-bladder 30 (3.92) | Colon 5 (6.6) | Gall-bladder 7 (3.8) | Pancreas 89 (3.2) | Pancreas 11 (4.6) |
| Large intestine 29 (3.79) | Ovary 4 (5.2) | Lung and Bronchus 6 (3.2) | Lung 76 (2.7) | Oesophagus 10 (4.2) |
| Trachea 18 (2.35) | Bile-duct 2 (2.6) | Oesophagus 6 (3.2) | Gall-bladder 75 (2.6) | Gall-bladder 8 (3.4) |
| Pancreas 12 (1.56) | Flex. sigmoidea 2 (2.6) | Ovary 5 (2.7) | Large intestine 68 (2.4) | Uri. bladder 7 (2.9) |
| Oesophagus 11 (1.44) | Pancreas 2 (2.6) | Vulva a. Vagina 5 (2.7) | Rectum 65 (2.4) | Ovary 6 (2.5) |
| Urethra 9 (1.17) | Lung and Bronchus 2 (2.6) | Bile-duct 3 (1.6) | Liver 61 (2.1) | Vagina 6 (2.5) |
| Skin 9 (1.17) | Thyroid 1 (1.3) | Uri. bladder 3 (1.6) | Uri. bladder 26 (0.9) | Cheek 3 (1.3) |
| Vagina 7 (0.91) | Liver 1 (1.3) | Pancreas 3 (1.6) | Vagina 18 (0.6) | Liver 3 (1.3) |
| Vulva 7 (0.91) | Kidney 1 (1.3) | Duodenum 2 | Skin 17 (0.6) | Thyroid 3 (1.3) |
| Mouth cavity 6 (0.78) | Caecum 1 (1.3) | Liver 1 | Bile-duct 15 (0.6) | Duodenum 2 (0.8) |
| Thyroid 5 (0.65) | Uri. bladder 1 (1.3) | etc | Thyroid 15 (0.5) | Larynx 2 (0.8) |
| Small intestine 4 (0.52) | | | Kidney 10 (0.35) | Skin 1 (0.42) |
| Liver 3 etc | | | Suprarenal 10 (0.35) etc | etc |
| 766 | 77 | 185 | 2,859 | 238 |
| 4,452 | | | | 1,599 |

second most abundant cancer next to gastric cancer. The highest ratio is found in Dresden II, with 41.78%, and the lowest in Leningrad with 13.4%. In Tokyo and in Fukuoka it ranks second with 14.32% and 26% respectively.

Mammary cancer ranks eighth in Tokyo (3.79%), seventh in Fukuoka (4.2%), third in Kyoto (7.3%), and sixth in Niigata (4.7%), and is one of the relatively infrequent forms of cancer. On the contrary, in Germany it ranks second both in Dresden II (13.97%) and Kiel (18.56%), third in Dresden I (8.23%), and fifth in Göttingen (7.8%), and is far more abundant in Germany than in Japan. In the one Russian city, although mammary cancer ranks fourth the actual percentage is lower than in Germany.

Ovarian cancer ranks as the fourth commonest cancer in the female. Here we find no marked difference as to the different cities. The highest ratio is found in Fukuoka (9.4%), where it takes third place. It ranks fourth in Kyoto (6.7%) and in Niigata (8.2%), and fifth in Tokyo (4.63%).

Cancer of gall-bladder is comparatively frequent in the female, and it ranks between third to eleventh among all cancers. In Göttingen it ranks third with the highest ratio of 17%, while in Tokyo it ranks third with 6.74%, in Niigata third with 8.2%, in Fukuoka fifth with 7.3%, in Dresden I fourth with 6.6%. It is relatively infrequent in Kiel, Leningrad, etc., and there are only three cases for Kyoto, where it takes ninth place.

Hepatic cancer. This ranks fifth in Niigata (4.7%), sixth in Tokyo (4.2%) and in Fukuoka (6.2%), with the total of 30 cases for the three cities. In striking contrast to this, hepatic cancer is among the rarest of internal cancers in Germany, there being only 10 cases for four cities combined. For Kyoto only a single case is recorded. It is an important fact that hepatic cancer is relatively abundant not only in male but also in female.

In both sexes combined, gastric cancer takes the first rank in all cities, excepting Dresden II where this rank is taken by uterine

cancer. The second rank is taken by oesophageal cancer in Dresden I, Leningrad and Chicago, but in Japan second rank is taken by uterine cancer in two cities (Kyoto and Niigata) and by hepatic cancer in two other cities (Tokyo and Fukuoka). Hepatic cancer is in the third place in Niigata and fifth place in Kyoto. It is thus becoming increasingly clear that cancer of the liver is abundant in Japan.

I shall make no comment on the frequency of other cancers, but it is necessary to note here that due attention must be paid to the source of the autopsy cases becoming available at Pathological Institutes before statistics based on such material can be properly evaluated. Different clinical departments have more or less different forms of cancer to deal with. Internal clinics deal with cancers of internal organs, gynecological clinics most of the uterine cancers, surgical clinics mammary and rectal cancers, dermatological clinics cancers of penis and of skin, while oto-rhino-laryngological clinics occupy themselves with cancer of the larynx. Such being the case, it is first necessary to ascertain that the sources of autopsy cases are fairly evenly distributed among all the various branches of clinical medicine, before attempting a determination of the relative frequency of cancer in different organs on the basis of autopsy statistics. I shall discuss this point again in Chapter I, Part IV of this paper.

Note: In "Gastric Cancer" by Miyake¹⁾, it is stated that during the twenty-three years from 1904 to 1927, there were in the Pathological Institute of Kyushu Imperial University, 4,601 autopsy cases, of which 623 showed cancers. Of these cancers, 224 (36.1%) were gastric cancers, against which there were the surprising number of 102 (16.5%) hepatic cancers. Uterine cancer numbered 59 (8.4%), cancers of ileum and of colon 20 (3.2%), and of pancreas 20 (3.2%).

¹⁾ Miyake, Miyagi and Taniguchi. "Gastric Cancer" 1927.

Table
Both

| | Tokyo 1894-1932 (Nagayo) Number % | Fukuoka 1905-1915 (Ohno) Number % | Kyoto 1901-1915 (Suzuki) Number % | Niigata 1912-1932 (Tanaka) Number % | Dresden I. (Krankenhaus) 1893-1927 (Junghans) Number % |
|----|--|--|--|---|--|
| 1 | Stomach 674 (42.68) | Stomach 133 (39.2) | Stomach 135 (35.4) | Stomach 81 (39.7) | Stomach 967 (31.0) |
| 2 | Liver 106 (6.71) | Liver 55 (16.2) | Uterus 44 (11.5) | Uterus 15 (7.2) | Oesophagus 322 (10.2) |
| 3 | Oesophagus 86 (5.45) | Intestines 27 (8.0) | Oesophagus 25 (6.6) | Liver 14 (6.8) | Respiratory tract 305 (9.8) |
| 4 | Lung 86 (5.45) | Uterus 25 (7.4) | Rectum 24 (6.3) | Gall-bladder 13 (6.4) | Uterus 288 (9.0) |
| 5 | Uterus 68 (4.36) | Oesophagus 21 (6.2) | Liver 21 (5.5) | Lung 13 (6.4) | Colon 203 (6.5) |
| 6 | Gall-bladder 65 (4.11) | Gall-bladder 10 (2.9) | Intestines 16 (4.2) | Oesophagus 9 (4.4) | Rectum 193 (6.2) |
| 7 | Rectum 51 (3.23) | Ovary 9 (2.6) | Upper jaw 15 (3.9) | Rectum 8 (3.9) | Gall-bladder 127 (4.0) |
| 8 | Upper jaw 46 (2.91) | Lung 8 (2.4) | Pancreas 13 (3.4) | Ovary 7 (3.4) | Breast 116 (3.7) |
| 9 | Bile-duct 44 (2.78) | Pancreas 8 (2.4) | Breast 12 (3.1) | Bile-duct 7 (3.4) | Ovary 80 (2.5) |
| 10 | Pancreas 41 (2.60) | Tongue 6 (1.8) | Ovary 10 (2.6) | Colon 5 (2.4) | Pancreas 68 (2.2) |
| 11 | Duodenum 25 (1.58) | Skin 6 (1.8) | Tongue 7 (1.8) | Breast 4 (1.9) | Oral Cavity 68 (2.2) |
| 12 | Tongue 24 (1.52) | Upper jaw 5 (1.5) | Lung 7 (1.8) | Pancreas 4 (1.9) | Prostate 58 (1.9) |
| 13 | Breast 23 (1.46) | Bile-duct 5 (1.5) | Larynx 7 (1.8) | Skin 4 (1.9) | Urinary tract 49 (1.6) |
| 14 | Ovary 22 (1.39) | Bladder 5 (1.5) | Gall-bladder 7 (1.8) | Bladder 4 (1.9) | Bile-duct 41 (1.3) |
| 15 | Bladder 20 (1.27) | Breast 4 (1.2) | Neck 5 (1.3) | Duodenum 3 (1.4) | Liver 31 (1.0) |
| 16 | Kidney 19 (1.20) | Penis 4 (1.2) | Pleura 4 (1.0) | Upper jaw 2 (0.9) | Thyroid 23 (0.9) |
| 17 | Larynx 17 (1.08) | Larynx 3 (0.9) | Oral cavity 4 (1.0) | Accessory nasal cavity, Thyroid, Mediastinum | Skin 25 (0.8) |
| 18 | Coecum 16 (1.01) | Thyroid 3 (0.9) | Thyroid 3 (0.8) | | Intestines 20 (0.6) |

C IX.

Sexes.

| Dresden II. (Pflegeanstalt) 1903-1927 (Junghans) Number % | Göttingen 1921-1927 (Egenolf) Number % | Kiel 1919-1928 (Harms) Number % | Leningrad 1900-1924 (Wilinski) Number % | Chicago 1927 (Wells) Number % | Budapest 1925-1929 (Wolff-Gaal) Number % |
|---|---|--|--|--|---|
| Uterus 320 (29.9) | Stomach 64 (31.5) | Stomach 157 (36.9) | Stomach 3,253 (45.2) | Stomach 142 (35.4) | Stomach 96 (20.9) |
| Stomach 184 (17.2) | Colon 19 (9.4) | Rectum 41 (9.6) | Oesophagus 1,525 (21.2) | Oesophagus 50 (12.4) | Uterus 87 (18.9) |
| Breast 107 (10.0) | Rectum 18 (8.9) | Breast 34 (8.0) | Uterus 380 (5.3) | Colon and rectum 37 (9.2) | Bladder 37 (7.5) |
| Rectum 78 (7.5) | Gall-bladder 16 (7.9) | Oesophagus 28 (6.6) | Respiratory tract 363 (5.05) | Pancreas 32 (8.0) | Colon 36 (7.3) |
| Respiratory tract 65 (6.1) | Uterus 14 (6.9) | Uterus 27 (6.3) | Pancreas 199 (2.7) | Uterus 27 (6.7) | Rectum 26 (5.6) |
| Oesophagus 51 (5.1) | Prostate 12 (5.9) | Lung and bronchus 25 (6.3) | Colon 177 (2.46) | Bladder 23 (5.8) | Pancreas 24 (5.2) |
| Colon 38 (3.5) | Oesophagus 9 (4.4) | Colon 22 (5.2) | Breast 144 (2.0) | Bile-duct 20 (5.0) | Oesophagus 23 (5.0) |
| Gall-bladder 33 (3.1) | Lung and bronchus 9 (4.4) | Bladder 10 (2.3) | Liver 133 (1.93) | Lung and bronchus 17 (4.2) | Breast 21 (4.6) |
| Ovary 31 (2.9) | Breast 7 (3.4) | Prostate 9 (2.1) | Ovary 136 (1.90) | Breast 16 (4.0) | Cheek 17 (3.7) |
| Prostate 19 (1.8) | Larynx 5 (2.5) | Gall-bladder 9 (2.1) | Rectum 123 (1.71) | Liver 15 (3.7) | Larynx 15 (3.3) |
| Skin 19 (1.8) | Bile-duct 5 (2.5) | Pancreas 9 (2.1) | Bladder 102 (1.4) | Oral cavity 12 (3.0) | Liver 13 (2.8) |
| Oral cavity 18 (1.7) | Bladder 4 (2.0) | Upper respiratory tract 8 (1.9) | Gall-bladder 95 (1.3) | Tongue 6 (1.5) | Prostate 10 (2.2) |
| Pancreas 16 (1.5) | Pancreas 4 (2.0) | Bile-duct 7 (1.4) | Intestine 75 (0.96) | Skin 6 (1.5) | Gall-bladder 10 (2.2) |
| Urinary tract 15 (1.4) | Ovary 4 (2.0) | Ovary 5 (1.2) | Tongue 55 (0.70) | | Thyroid 7 (1.5) |
| Thyroid 8 (0.7) | Liver 4 (2.0) | External genitals (female) 5 (1.2) | Skin 50 (0.68) | | Ovary 6 (1.3) |
| Vagina 7 (0.6) | Kidney 3 (1.5) | Duodenum 4 (0.9) | Pharynx 41 (0.5) | | Vagina 6 (1.3) |
| Vulva 7 (0.6) | Thyroid 2 (1.0) | Liver 2 (0.5) | Lip 37 (0.48) | | Lung 5 (1.1) |
| Liver 7 (0.6) | Tongue 1 (0.5) | Penis 1 | Bile-duct 32 (0.4) | | Tongue 4 (0.9) |

| | Tokyo 1894-1932 (Nagayo) Number % | Fukuoka 1905-1915 (Ohno) Number % | Kyoto 1901-1915 (Suzuki) Number % | Niigata 1912-1932 (Tanaka) Number % | Dresden I. (Krankenhaus) 1893-1927 (Junghans) Number % |
|---------------------------|---|--|---|---|--|
| 19 | Adrenals 16 (1.01) | Lower jaw 2 (0.6) | Bile-duct 3 (0.8) | Pelvis, Larynx, Plate, Tongue, Hypophysis, External genitals (female), Anus, Retropérito- neum 1 each | Vagina 18 (0.6) |
| 20 | Skin 13 (0.82) | Prostate 2 (0.6) | Skin 3 (0.8) | | Kidney 18 (0.6) |
| 21 | Thyroid 13 (0.82) | Branchiogen 1 (0.3) | Prostate 3 (0.8) | | Testis 3 (0.1) |
| 22 | Pleura 11 | Omentum 1 (0.3) | Bladder 2 (0.5) | | Penis 2 |
| 23 | Neck 10 | | Mesentery 2 (0.5) | | Vulva 2 |
| 24 | Penis 10 | | Retropérito- neum 2 (0.5) | | Miscellaneous 85 |
| 25 | Pharynx Colon 8 each | | Lower jaw, Kidney, Thymus, Penis, Testis, Retropérito- pharynx, Ex- ternal geni- tals 1 each | | |
| 26 | Oral cavity, Bronchus, Vagina 6 each | | | | |
| 27 | Thymus, Prostate 5 each | | | | |
| 28 | Testis, Exter- nal genitals (female), Lip 4 each | | | | |
| Total | 1,579 (13.70) | 339 (16.8) | 381 | 204 (11.6) | 3,117 (4.19) |
| Number of Autopsies | 12,077 | 2,017 | | 1,760 | 24,094 |

| Dresden II. (Pflegean- stalt) 1903-1927 (Junghans) Number % | Göttingen 1921-1927 (Egenolf) Number % | Kiel 1919-1928 (Harms) Number % | Leningrad 1900-1924 (Wilinski) Number % | Chicago 1927 (Wells) Number % | Budapest 1925-1929 (Wolff-Gall) Number % |
|--|---|--|--|--|---|
| Intestines 6 (0.6) | | Other Organs 21 | Adrenals 31 (0.4) | | Lip, Kidney, Trachea, Duodenum 2 each |
| Bile-duct 4 (0.4) | | | Prostate 29 (0.4) | | Skin, Ileum, Peritoneum, External genitals 1 each |
| Kidney 3 (0.3) | | | Thyroid 22 (0.2) | | |
| Testis 2 (0.2) | | | Peritoneum 16 (0.2) | | |
| Penis 1 | | | Pleura 12 (0.16) | | |
| Miscellane- ous 15 | | | Oral cavity 11 (0.15) | | |
| | | | Penis 4 (0.05) | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 1069 | 203 (14.58) | 426 (13.47) | 7,277 (8.6) | 403 | 459 |
| 7,683 | 2,166 | 3,162 | 84,645 | | 3,186 |

CHAPTER V.

ON THE SITE OF CANCER DEVELOPMENT IN VARIOUS ORGANS.

The primary sites of major cancers of internal organs encountered during the later period of the Pathological Institute, Tokyo Imperial University, may be tabulated as follows:—

Gastric cancer. More than half (117 out of 319 cases or 55.48%) of gastric cancers, as seen in the next table, occurred in

Table C X.

Sites of Cancer Development in Various
Organs (1915-1932).

Gastric Cancer (319)

| Sites | Cases (%) | Cases found only at Autopsy |
|-------------------|------------|--------------------------------|
| Pylorus | 177(55.48) | 24(13.56) |
| Lesser curvature | 57(17.87) | 13(22.98) |
| Greater curvature | 8(2.51) | 0 |
| Cardia | 27(8.40) | 6(22.22) |
| Other sites | 50(15.67) | 6(12.00) |
| Undetermined | 8 | 0 |
| Total | 319 | 49(15.36) |

Oesophageal Cancer (30)

| Parts | Cases (%) | Cases found only at Autopsy |
|---------------|-----------|--------------------------------|
| Upper narrow | 7(23.33) | 1(14.29) |
| Middle narrow | 12(40.00) | 0 |
| Lower narrow | 11(36.67) | 2(18.18) |
| Total | 30 | 3(10.00) |

Hepatic Cancer (53)

| Sites \ Tumors | Hepatoma | Hepatic duct cancer | Total | Per cent |
|----------------|----------|---------------------|-------|----------|
| Right lobe | 21 | 5 | 26 | 49 |
| Left lobe | 7 | 3 | 10 | 19 |
| Both lobes | 11 | 3 | 14 | 26 |
| Undetermined | 3 | 0 | 3 | 6 |
| Total | 42 | 11 | 53 | |

Bile-duct Cancer (22)

| Sites | Cases (%) | Cases found only at Autopsy |
|------------------|-----------|-----------------------------|
| Hepatic duct | 10(45.45) | 2(20.00) |
| Cystic duct | 2(9.09) | 0 |
| Common bile-duct | 8(36.36) | 0 |
| Other sites | 2(9.09) | 1(50.00) |
| Total | 22 | 3(13.18) |

Pancreatic Cancer (28)

| Parts | Cases (%) | Cases found only at Autopsy |
|-------------|-----------|-----------------------------|
| Cephalic | 18(67.86) | 3(16.67) |
| Ventral | 2(7.14) | 1(50.00) |
| Caudal | 1(3.57) | 0 |
| Other parts | 7(25.00) | 0 |
| Total | 28 | 4(14.25) |

the pyloric region. Those occurring in the lesser curvature come next in number (57 or 17.87%), followed by cancers of the cardiac region which are comparatively numerous (27 or 8.4%). Cancer

Gall-bladder Cancer (31)

| Parts | Cases (%) | Cases found only at Autopsy |
|--------------|-----------|-----------------------------|
| Bottom | 9(29.03) | 2(22.22) |
| Neck | 7(22.58) | 1(14.29) |
| Other parts | 11(35.48) | 3(27.27) |
| Undetermined | 4(12.90) | 1(25.00) |
| Total | 31 | 7(22.58) |

Duodenal Cancer (18)

| Parts | Cases (%) | Cases found only at Autopsy |
|---------------|-----------|-----------------------------|
| Papillar part | 13(72.22) | 4(30.77) |
| Other parts | 2(11.11) | 1(50.00) |
| Undetermined | 3(16.67) | 1(33.33) |
| Total | 18 | 6(33.33) |

Lung Cancer (53)

| Sites | | Cases (%) | Cases found only at Autopsy |
|------------------|--------------|-----------|-----------------------------|
| Right lung 32 | Upper lobe | 23(43.40) | 1(4.30) |
| | Middle lobe | 1(1.89) | 0 |
| | Lower lobe | 4(7.55) | 1(25.00) |
| | Hilus | 4(7.55) | 0 |
| Left lung 21 | Upper lobe | 15(28.30) | 0 |
| | Lower lobe | 3(5.66) | 2(66.67) |
| | Hilus | 1(1.89) | 1(100.00) |
| | Undetermined | 2(3.78) | 0 |
| Total | | 53 | 5(9.43) |

of the great curvature is least in number, namely, 8 or 2.5%. Of these cancers those that were not clinically detected but found at autopsy occurred mostly in the lesser curvature and cardiac region. The difficulty of clinical diagnosis of cancer of these locations is understandable on account of their anatomical relations. According to the reports of Ishibashi, Takatsu, Suzuki, Tanaka, etc., pylorus cancer is most abundant and makes up more than half of all gastric cancers.

Oesophageal cancer. Of the three favorite locations, the most common site is the middle portion, roughly corresponding to the level of the tracheal bifurcation, and about 40 per cent of all oesophageal cancers occurred in this portion. The lower part of the oesophagus is also comparatively frequently affected by cancer, the ratio being 11 against 12 of the middle portion. Cancer of the upper part of the oesophagus is far less numerous. These points agree well with the statistics of the early period, which give the following figures: upper part, 9 (16.1%), middle part, 24 (42.9%), lower part, 18 (32.1%). Suzuki's statistics give: Upper part 6, middle part 15, lower part 4.

Cancer of bile-duct. Hepatic duct ranks highest, followed by common bile-duct, while there are only 2 cases involving the cystic duct. In the statistics for the early period, common bile-duct is rated higher than hepatic duct.

Duodenal cancer. The majority (13 or 72.2%) of this form of cancer arose from the papillar portion. It is not an uncommon experience to unexpectedly find at autopsy an adenoma or adenoma-like hyperplasia of the papillar portion. The diagnosis of cancer of this portion at an early stage is extremely difficult, especially when jaundice is not very marked. As seen in the above table, 4 (30%) out of 13 cancers of the papillar portion were detected only at autopsy.

Hepatic cancer. Hepatoma often occurs multicentrically, especially when preceded by sclerotic changes. There are cases

when hepatoma develops without the preceding cirrhosis, and when it is not of multiple origin it arises more frequently in the right lobe. The above table includes 21 cases of right lobe origin and those referable to the left lobe origin amount to one-third that number, namely 7. In 11 cases both right and left lobes are involved.

The frequency of cancers arising from the intrahepatic bile-ducts shows little difference as to the right or left lobes, and these seem to develop most commonly in the vicinity of the hepatic hilus. Yamagiwa found 13 (56.5%) of the right lobe, 3 (13.0%) of the left lobe, and 7 of both lobes, out of the total of 23 cases. Suzuki reported 11 right, 4 left, and 6 of both lobes, out of 21 cases.

Gall-bladder cancer. When it was possible to determine the primary site of origin, the bottom portion of the gall-bladder seemed most frequent, followed by the fundus.

Pancreas cancer. The cephalic portion of the pancreas is said to be the most frequent site; and the above table is in agreement with this. Of the total of 28 cases, 18, or about 70 per cent, belong to this location. In Suzuki's report including 13 cases, 8 (61.5%) occurred in the cephalic, 1 in ventral, and 4 (30.8%) in the caudal portions.

Lung cancer. 32 of these occurred in the right and 21 in the left lung, being more frequent in the right lung than in the left. In both lungs the upper lobe showed cancer more often than the lower lobe, actual figures being 23 (43.4%) for right upper lobe, and 15 (28.3%) for the left upper lobe.

CHAPTER VI.

ON METASTASES.

Of 767 cases of cancer encountered during the later period of the Tokyo Imperial University Pathology Institute, those showing metastases in lymph-node and other organs are tabulated in Table C XI. These metastases include only those that were detected macroscopically, and the number will greatly increase if we incorporate the results of microscopical examinations.

The more salient points in the above table may be recounted as follows:—

Gastric cancer. In 319 cancer cases, the metastases are distributed as follows: Organ metastases, arranged according to the frequency are; 115 for liver, 98 for peritoneum, 53 for mesenteric membrane, 46 for pancreas, 42 for intestine, and 24 for lung. Lymph-node metastases are: 167 for perigastric nodes, which rank highest, followed by 77 for mesenteric, 45 for portal, 35 for supra-clavical, 19 for broncho-pulmonary, 12 for mediastinal, 7 each for cervical and inguinal, and 6 for axillary nodes.

Outside of these, 19 metastases for suprarenal gland, 10 for kidney, 9 for spleen, 13 for ovary, 11 for bone marrow, 5 for skin, 9 for the lumen of blood vessels, 12 for pleura, etc., are noteworthy as metastases of gastric cancer.

Hepatic cancer. Of 53 cases of metastases, as many as 15 occurred in the lung. Metastases in other organs were less frequent, the figures being 9 for the lumen of portal vein, 8 for peritoneum, 7 for hepatic lymph-node, 5 each for pulmonary, retroperitoneal, and mesenteric lymph-nodes, 4 for gall-bladder, etc. Metastases seem generally less frequent in hepatic cancer than in gastric cancer.

Oesophageal cancer. Out of 30 cases, the metastases were found mostly in nearby lymph-nodes: 9 in mediastinal, 7 in supra-clavical, 6 in cervical nodes, etc. Other metastases, namely, 6 in lung, 5 in trachea, 3 in heart, etc., are noteworthy as being due to

Table
Metastases of Various

| Primary Cancer and its Number | | Tongue (8) | Upper jaw (15) | Pharynx (15) | Oesophagus (30) | Stomach (319) | Liver (53) | Gall bladder (31) | Bile-duct (22) | Duodenum (18) | Caecum (6) | Colon (8) | Rectum (7) |
|-------------------------------|-----------------|------------|----------------|--------------|-----------------|---------------|------------|-------------------|----------------|---------------|------------|-----------|------------|
| Metastatic Sites | | | | | | | | | | | | | |
| Lymph-nodes | Cervical | 4 | 3 | 1 | 6 | 7 | — | — | — | — | — | 1 | — |
| | Supraclavicular | 1 | — | — | 7 | 35 | — | 5 | 1 | 2 | — | 1 | — |
| | Axillary | — | — | — | — | 6 | — | — | — | — | — | — | — |
| | Mediastinal | — | — | — | 9 | 12 | 2 | 2 | — | — | — | 1 | — |
| | Pulmobronchial | — | 1 | — | 4 | 19 | 5 | 5 | 2 | 1 | 2 | — | — |
| | Perigastric | — | — | — | 2 | 167 | 3 | 7 | 2 | 4 | — | 1 | — |
| | Liver hilus | — | — | — | — | 45 | 7 | 10 | 8 | 4 | — | — | — |
| | Retroperitoneal | — | — | — | 4 | 82 | 5 | 11 | 5 | — | 1 | 2 | — |
| | Mesenteric | — | — | — | 2 | 77 | 5 | 6 | 2 | 1 | 4 | 2 | 1 |
| | Inguinal | — | — | — | — | 7 | — | — | — | 1 | — | — | 1 |
| | Caecal | — | — | — | — | 1 | — | — | — | — | — | — | — |
| | Subclavicular | — | — | — | 1 | 2 | — | — | — | — | — | — | — |
| | Submental | 1 | 1 | 1 | 1 | — | — | — | — | — | — | — | — |
| Organs | Lung | 2 | — | — | 6 | 24 | 15 | 9 | 4 | 1 | 1 | — | 1 |
| | Pleura | — | — | — | 1 | 12 | 2 | — | 1 | — | — | — | — |
| | Heart | — | — | — | 3 | — | — | — | — | — | — | — | — |
| | Pericardium | — | — | — | 2 | 3 | — | — | 1 | — | — | — | — |
| | Liver | — | 2 | — | 3 | 115 | / | 26 | 8 | 7 | — | 3 | 2 |
| | Pancreas | — | — | — | — | 46 | — | 4 | 3 | 3 | — | 1 | — |
| | Kidney | — | — | — | — | 10 | 1 | — | 1 | — | — | 1 | — |
| | Adrenal gland | — | 1 | — | 1 | 19 | 1 | — | — | — | — | — | — |
| | Intestine | — | — | — | — | 42 | 2 | 4 | — | 1 | — | / | / |

C XI.

Organ Cancers.

| Uterus (27) | Ovary (9) | Mammary gland (11) | Skin (12) | Cervical region (7) | Larynx (7) | Lung (53) | Pleura (11) | Kidney (16) | Adrenal gland (12) | Urinary bladder (12) | Pancreas (28) | Thymus (5) | Testicle (4) |
|-------------|-----------|--------------------|-----------|---------------------|------------|-----------|-------------|-------------|--------------------|----------------------|---------------|------------|--------------|
| — | — | — | 3 | 2 | 2 | 5 | 2 | 1 | — | — | — | — | — |
| — | 1 | 3 | 1 | — | 1 | 17 | 1 | 2 | 1 | 2 | 5 | 2 | — |
| — | 1 | 3 | 1 | — | — | 7 | 1 | 3 | — | — | 1 | — | — |
| — | 1 | 2 | — | — | — | 16 | 3 | 4 | 1 | 1 | 1 | 3 | — |
| — | 1 | 2 | — | — | — | 27 | 4 | 5 | 3 | — | — | 1 | 1 |
| — | — | — | — | — | — | 2 | 1 | — | 1 | — | 7 | 1 | — |
| — | 1 | 1 | 1 | — | — | 5 | — | 3 | — | — | 6 | — | — |
| 3 | 4 | 1 | 1 | — | — | 9 | 2 | 8 | 4 | 5 | 9 | 2 | 2 |
| 1 | 1 | 1 | — | — | — | 4 | 1 | 1 | 1 | 1 | 6 | 1 | — |
| 2 | 1 | — | 1 | — | — | 1 | — | 1 | — | 2 | 1 | 1 | 1 |
| 1 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | 1 | 1 | — | — | — | 2 | — | — | — | — | 1 | — | — |
| — | — | — | — | 1 | 2 | 1 | — | 1 | — | — | — | — | — |
| 3 | — | 4 | 2 | 1 | — | / | 6 | 10 | 6 | 1 | 5 | 2 | 4 |
| — | 3 | 2 | 1 | — | — | 9 | / | 2 | — | — | 1 | 1 | — |
| — | — | — | — | — | — | 3 | 1 | 2 | 1 | 1 | — | 2 | — |
| — | 1 | — | 1 | — | — | 6 | 2 | — | — | — | 1 | 2 | — |
| 2 | 2 | 4 | 1 | — | — | 14 | 1 | 7 | 7 | 1 | 19 | 1 | 2 |
| — | 1 | — | — | — | — | 2 | 1 | — | 2 | — | / | — | — |
| 2 | 1 | 2 | — | — | — | 12 | 1 | / | 1 | 1 | 4 | 1 | — |
| — | 1 | 1 | — | — | — | 9 | — | 3 | / | 1 | 2 | 3 | — |
| 3 | 1 | — | — | — | — | — | — | 1 | — | — | 5 | 1 | — |

| Primary Cancer and its Number | | Tongue (8) | Upper jaw (15) | Pharynx (15) | Oesophagus (30) | Stomach (319) | Liver (53) | Gall-bladder (31) | Bile-duct (22) | Duodenum (18) | Caecum (6) | Colon (8) | Rectum (7) |
|-------------------------------|--------------------------|------------|----------------|--------------|-----------------|---------------|------------|-------------------|----------------|---------------|------------|-----------|------------|
| Metastatic Sites | | | | | | | | | | | | | |
| Organs | Gall-bladder | — | — | — | — | 12 | 4 | / | 1 | — | — | — | — |
| | Omentum majus | — | — | — | 1 | 53 | 2 | 4 | 2 | — | — | 1 | — |
| | Peritoneum | — | — | — | 1 | 98 | 8 | 10 | 2 | — | 2 | 2 | 2 |
| | Oesophagus | — | 1 | — | / | 9 | — | — | — | — | — | — | — |
| | Spleen | — | — | — | — | 9 | 2 | — | — | — | — | — | — |
| | Urinary bladder | — | — | — | — | 7 | — | — | — | — | — | 1 | 2 |
| | Ovary | — | — | — | — | 13 | — | — | — | — | — | — | 1 |
| | Bone-marrow | — | 9 | — | — | 11 | 1 | 2 | — | — | — | 1 | — |
| | Skin | — | — | — | — | 5 | — | — | — | — | — | — | — |
| | Muscle | — | — | — | — | 3 | — | — | — | — | — | — | — |
| | Thrombus in blood vessel | — | — | — | — | 9 | 9 | — | 1 | — | — | — | — |
| | Stomach | — | — | — | — | / | 2 | 3 | — | — | — | — | — |
| | Trachea | — | — | — | 5 | — | — | — | — | — | — | — | — |
| | Thyroid gland | — | — | — | 2 | — | — | — | — | — | — | — | — |
| | Brain | — | — | — | — | — | — | — | — | — | — | — | — |
| | Testicle | — | — | — | — | — | — | — | — | — | — | — | — |
| | Meninx | — | — | — | — | — | — | — | — | — | — | — | — |
| | | 43 | | | 44 | | | | | 45 | | | |

the local anatomical relations.

Gall-bladder cancer. As many as 26 metastases out of 31 cancer cases were found in the liver. Other metastases were 10 for peritoneum, 9 for lung, 4 each for mesenteric membrane, intestine, pancreas. Metastases were frequent also in the nearby lymph-nodes.

Pancreatic cancer. Of the metastases for 28 cancer cases,

| Uterus (27) | Ovary (9) | Mammary gland (11) | Skin (12) | Cervical region (7) | Larynx (7) | Lung (53) | Pleura (11) | Kidney (16) | Adrenal gland (12) | Urinary bladder (13) | Pancreas (38) | Thymus (5) | Testicle (4) |
|-------------|-----------|--------------------|-----------|---------------------|------------|-----------|-------------|-------------|--------------------|----------------------|---------------|------------|--------------|
| — | — | — | — | — | — | — | — | — | — | — | 1 | — | — |
| — | 3 | — | 1 | — | — | — | — | — | — | — | 3 | — | — |
| 2 | 7 | — | 1 | 1 | — | 1 | 2 | 4 | 1 | — | 6 | — | 1 |
| — | — | — | — | — | — | — | — | — | 1 | — | — | — | — |
| 2 | — | 1 | — | — | — | 2 | — | 1 | 1 | — | 1 | — | — |
| 7 | — | — | — | — | — | — | — | 1 | — | / | — | — | — |
| — | / | 1 | — | — | — | — | — | — | — | — | 1 | — | — |
| — | — | 4 | 1 | — | — | 16 | 2 | 2 | 1 | 1 | — | — | — |
| — | 1 | 2 | 1 | — | — | — | — | 2 | 1 | — | — | — | — |
| — | — | — | 1 | — | — | 3 | 1 | 2 | — | — | 1 | — | — |
| — | — | — | — | 1 | — | 4 | — | 1 | 1 | 1 | 1 | — | — |
| — | — | — | — | — | — | — | — | — | 1 | — | 3 | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | 1 | — | — | — | — | — | — | — |
| 1 | — | — | — | — | — | 1 | — | 1 | 1 | — | — | — | 1 |
| — | — | — | — | — | — | — | — | 1 | — | — | — | — | — |
| — | — | — | 1 | 1 | — | 5 | — | — | — | — | — | — | — |
| 46 | | 47 | 48 | | 49 | | | | | | | | |

the largest number 19, occurred in the liver, while 6 were found in the peritoneum, 5 in intestine, 4 in kidney and 3 in mesenteric membrane, these being the more important of the organ metastases. Lymph-node metastases were, 9 in retroperitoneal, 7 in portal, 7 in perigastric, 6 in mesenteric, 5 in supraclavical nodes, etc.

Lung cancer. In 53 cancer cases, the largest metastatic num-

ber were found in the tracheal lymph-node, namely, 27. Figures for other lymph-node metastases were: 17 for supraclavical, 16 for mediastinal, and 9 for retroperitoneal nodes, these being the more frequent sites for metastasization. In addition, metastases of lung cancer are often formed through the blood circulation, and for this form of metastases we find the following figures: 16 for bone marrow, 14 for liver, 12 for kidney, 9 each for suprarenal gland and pleura, 6 for pericardium, 5 for meninges, 4 for blood vessels (intravascular), 3 each for heart and muscle, etc. It may be a characteristic property of lung cancer that it metastasizes extensively through both vascular and lymphatic channels. The total number of metastases of lung cancer is 184, which is very large. It is conceivable that the histological structure of lung tissue is such that it permits ready invasion of lymphatics, blood capillaries, and pulmonary veins on the part of cancer cells.

Uterine cancer. The total number of metastases for 27 cases of uterine cancer is 29, showing that metastases are not very common with uterine cancer. The neighboring organ, urinary bladder, is the most frequent site of metastasization, with 7 cases of metastases. Three cases each were found also in intestine, retroperitoneum, and lung.

Mammary cancer. Bone marrow metastases are said to be frequent, but in our statistics there are only 4 each for bone marrow, lung, liver, etc. These are all hematogenic metastases. Lymphatic metastases are generally less frequent, and are found only in local lymph-nodes.

Duodenal cancer. Of 18 cancer cases, liver showed the highest figure, which is 7, pancreas 3. Four each were found in perigastric and retroperitoneal lymph-nodes. Duodenal cancer seems less liable to metastasis than gastric cancer.

Kidney cancer. Metastases are relatively frequent, 16 cases of renal cancer showing the total of 69 metastases. Lung is the most common site of metastases, with 10, followed by retroperi-

toneal lymph-node (8), liver (7), peritoneum (4), suprarenal gland (3), tracheal lymph-node (5), mediastinal lymph-node (4), etc.

Cancer of upper jaw. Contrary to the preceding, metastases of cancer of the upper jaw are infrequent, there being only 18 metastases in 15 cases of this form of cancer. It is noteworthy that as many as 9 of these metastases occurred in the bone marrow.

Suprarenal cancer. In 12 cancer cases, metastases were most frequent in liver (7) and lung (6), followed by retroperitoneal lymph-node (4), mediastinal lymph-node (1), etc. These figures indicate that suprarenal cancer metastasizes through both vascular and lymphatic channels.

I shall refrain from commenting on other cancers individually, but shall point out here as of interest that 3 out of 5 cases of cancer of thymus showed metastases in the suprarenal gland, that all the 4 cases of testicular cancer formed metastases in lung, and that cancer of pleura metastasizes relatively frequently, and in 6 out of 11 cases the metastases were found in the lung.

Cancers almost always metastasize when they attain a certain degree of development, but there is naturally some difference as to the rapidity, frequency, course of progress, etc., depending upon the difference in the site of primary growth and in the histological structure of the growth itself. Table C XII was prepared in order to elucidate these points based on the material of the late period of the Pathological Institute of Tokyo Imperial University. In this table are noted the number of cancers in various organs, number of metastases, ratio of the latter to the former, etc.

The above table shows that in frequency of metastases formation various organ cancers arrange themselves somewhat as follows: thymus, kidney, ovary, gall-bladder, lung, mammary gland, suprarenal gland, testicle, stomach, pleura, colon, oesophagus, bile-duct, etc. On the contrary, the cancers of pharynx, neck, tongue, larynx, uterus, upper jaw, etc., metastasize generally infrequently.

Also, the above table indicates that the metastasization of

cancer through the vascular route, in addition to the lymphatic channel, is quite common. In some cases there are more hematogenic metastases than lymphatic ones.

Table C XII.
Frequency of Metastases of Various Organ Cancers.

| Prim. cancer | Cases | Lymphatic metastases | Metastases in organ | Total metastases | Ratio |
|---------------|-------|----------------------|---------------------|------------------|-------|
| Stomach | 319 | 460 | 500 | 960 | 3.01 |
| Liver | 53 * | 27 | 49 | 76 | 1.43 |
| Oesophagus | 30 | 36 | 25 | 61 | 2.03 |
| Gall-bladder | 31 | 46 | 62 | 108 | 3.48 |
| Pancreas | 28 | 37 | 54 | 91 | 3.26 |
| Lung | 53 | 96 | 88 | 184 | 3.47 |
| Bile-duct | 22 | 20 | 24 | 44 | 2.00 |
| Duodenum | 18 | 13 | 12 | 25 | 1.39 |
| Kidney | 16 | 29 | 40 | 69 | 4.31 |
| Adrenals | 12 | 11 | 25 | 36 | 3.00 |
| Upper jaw | 15 | 5 | 13 | 18 | 1.20 |
| Skin | 12 | 8 | 11 | 19 | 1.58 |
| Uterus | 27 | 7 | 22 | 29 | 1.07 |
| Ovary | 9 | 12 | 21 | 33 | 3.66 |
| Mammary gland | 11 | 14 | 21 | 35 | 3.19 |
| Bladder | 12 | 11 | 7 | 18 | 1.50 |
| Pleura | 11 | 15 | 17 | 32 | 2.90 |
| Tongue | 8 | 6 | 2 | 8 | 1.00 |
| Colon | 8 | 8 | 10 | 18 | 2.25 |
| Rectum | 7 | 2 | 8 | 10 | 1.43 |
| Larynx | 7 | 5 | 0 | 5 | 0.71 |
| Neck | 7 | 3 | 4 | 7 | 1.00 |
| Caecum | 6 | 7 | 3 | 10 | 1.66 |
| Pharynx | 5 | 2 | 0 | 2 | 0.40 |
| Thymus | 5 | 11 | 13 | 24 | 4.80 |
| Testicle | 4 | 4 | 8 | 12 | 3.00 |

CHAPTER VII.

AGE AND CANCER DEVELOPMENT IN VARIOUS ORGANS.

Table C XIII shows the lowest, highest and average ages of the total cancer cases dealt with in the late period of the Pathological Institute of Tokyo Imperial University, classified according to organs and also to sexes. Needless to say that the figures represent the ages at the time of death, and that the time of actual cancer development must be placed more or less ahead of these figures. In connection with the contents of this chapter the reader is requested to consult Table C VI.

In the newborn and in youths cancers are relatively frequently of liver (hepatoma), testicle, and kidney, including the mixed tumors containing cancer tissue.

Excluding these cancers, we find in the above table that there are a relatively large number of persons, both males and females, dying of cancer under the age of thirty.

In the male, the lowest age is in the twenties for death from tongue, stomach, caecum, liver, bile-duct, gall-bladder, lung, urinary bladder and skin cancers. The lowest age for suprarenal gland is 18. For oesophagus, duodenum, colon, rectum, bile-duct, trachea, mammary gland, etc., the lowest age is in the thirties. Only for pancreas and pharynx is the lowest age found to be as late as in the forties.

In the female, outside of hepatoma and renal cancers, the lowest age of death from stomach, caecum, rectum, pancreas, uterus and mammary gland cancers is in the twenties; for ovary we find cancer death at the age of 18. The lowest age for oesophagus, duodenum, bile-duct, gall-bladder, lung, skin, etc., is in the thirties.

It seems to be a fact that cancers of oesophagus or of pancreas are frequent in relatively aged persons. The vital statistics of the Bureau of Census also indicate the high frequency of oesophageal

Table C XIII.
Relation of Age and the Development of
Cases in different Organs.

| Sites | Sex | Cases | Total of Cases | Average Age | Age Min. -Max. | Average Age of both Sexes |
|------------------------|--------|-------|----------------|-------------|----------------|---------------------------|
| Stomach | Male | 242 | 319 | 52.38 | 20-77 | 51.60 |
| | Female | 77 | | 49.13 | 23-76 | |
| Pancreas | Male | 18 | 28 | 56.83 | 45-68 | 54.29 |
| | Female | 10 | | 49.70 | 26-68 | |
| Hepatoma | Male | 34 | 41 | 49.12 | 2-67 | 45.59 |
| | Female | 7 | | 28.43 | 1-49 | |
| Interhepatic Bile-duct | Male | 10 | 12 | 42.70 | 26-62 | 43.17 |
| | Female | 2 | | 45.50 | 32-59 | |
| Bile-duct | Male | 17 | 22 | 58.06 | 38-84 | 57.00 |
| | Female | 5 | | 53.40 | 31-74 | |
| Lung | Male | 35 | 53 | 51.21 | 27-72 | 54.23 |
| | Female | 18 | | 59.94 | 35-74 | |
| Bronchus | Male | 4 | 5 | 46.33 | 36-56 | 51.00 |
| | Female | 1 | | 65.00 | 65-65 | |
| Gall-bladder | Male | 18 | 31 | 52.18 | 21-70 | 52.65 |
| | Female | 13 | | 57.31 | 45-68 | |
| Oesophagus | Male | 26 | 30 | 54.93 | 39-75 | 54.63 |
| | Female | 4 | | 52.75 | 30-65 | |
| Mammary gland | Male | 1 | 11 | 35.00 | 35 | 53.00 |
| | Female | 10 | | 54.80 | 28-79 | |
| Ovary | Female | 9 | 9 | 39.00 | 18-54 | 39.00 |
| Uterus | Female | 27 | 27 | 46.56 | 23-76 | 46.56 |
| Testis | Male | 4 | 4 | 7.75 | 2-6 | 7.75 |
| Bladder | Male | 10 | 12 | 50.40 | 27-66 | 53.08 |
| | Female | 2 | | 66.50 | 65-68 | |

| Sites | Sex | Cases | Total of Cases | Average Age | Age Min. -Max. | Average Age of both Sexes |
|---------------|--------|-------|----------------|-------------|----------------|---------------------------|
| Upper jaw | Male | 13 | 15 | 46.17 | 28-64 | 47.22 |
| | Female | 2 | | 53.50 | 50-57 | |
| Larynx | Male | 5 | 7 | 53.60 | 43-66 | 52.57 |
| | Female | 2 | | 50.00 | 46-54 | |
| Tongue | Male | 7 | 8 | 52.58 | 25-78 | 52.88 |
| | Female | 1 | | 50.00 | 50-50 | |
| Duodenum | Male | 13 | 18 | 55.62 | 34-78 | 53.50 |
| | Female | 5 | | 48.00 | 36-58 | |
| Colon | Male | 4 | 5 | 38.25 | 33-43 | 42.80 |
| | Female | 1 | | 61.00 | 61-61 | |
| S. romanum | Male | 1 | 3 | 67.00 | 67-67 | 46.00 |
| | Female | 2 | | 35.50 | 23-48 | |
| Caecum | Male | 5 | 6 | 39.20 | 26-63 | 40.17 |
| | Female | 1 | | 45.00 | 45-45 | |
| Rectum | Male | 4 | 7 | 56.50 | 36-66 | 40.71 |
| | Female | 3 | | 33.67 | 25-51 | |
| Skin | Male | 9 | 12 | 52.56 | 24-72 | 52.42 |
| | Female | 3 | | 52.00 | 32-62 | |
| Kidney | Male | 14 | 16 | 34.57 | 2-67 | 30.69 |
| | Female | 2 | | 3.50 | 2-5 | |
| Adrenal gland | Male | 10 | 12 | 48.33 | 18-69 | 54.08 |
| | Female | 2 | | 68.00 | 67-69 | |

cancer among old people.

It is worthy of note, on the contrary, that cancers of caecum, colon, sygmoideum, rectum, etc., give a relatively low average, which is in the forties. Also the fact that the average age of 9 cases of ovarian cancer is 39 is striking. This is in an interesting contrast to the fact that testicular cancer in the male occurs most frequently in infants, and it suggests a certain embryological relation in the genesis of cancer.

Prostate cancer, as is well known, is a cancer of advanced age, and the report of Ishibashi gives the average for three cases as 70.3, which is the highest of all groups.

Taking arbitrarily as standard the average death age from gastric cancer, and not considering the cancers represented by very few cases, the following organs show higher age than does stomach : pancreas, bile-duct, rectum, duodenum, oesophagus, tongue, skin, gall-bladder, lung, urinary bladder, etc., giving about the same age, while liver, suprarenal, trachea, upper jaw, hepatic duct, caecum, colon, kidney, etc., give lower average age than does the stomach. The above age relations are for the male. For the female, we find lung, gall-bladder, mammary gland, oesophagus, skin, etc., giving higher age than pharynx, tongue, pancreas, duodenum, etc., which give about the same age as stomach, and uterus, hepatic duct, caecum, ovary, rectum, sygmoideum, liver (hepatoma) etc., giving a lower age.

CHAPTER VIII.

CLINICAL AND PATHOLOGICAL DIAGNOSIS.

Pathologists are well aware of the difficulty in making accurate clinical diagnosis of internal cancers, and in fact they are often surprised by the prevailing degree of accuracy as they perform autopsies on corpses coming from various clinical departments. Even at autopsy, it is difficult in some cases to correctly discriminate macroscopically cancers, other malignant tumors, and sometimes even chronic proliferative inflammation. In spite of the marked recent progress in diagnostics, it is of no rare occurrence that patients, diagnosed as having some other disease, are found at autopsy to have had cancer. There are also cases where clinical diagnosis of cancer was disproved and found to be some other disease at autopsy. Those especially difficult of diagnosis are cancers of internal organs, which, at an early stage, may even be largely impossible of diagnosis in living patients.

Questions arise then: how often are the clinical diagnoses of cancer correct, and how often incorrect? Cancers of which organs are more liable to be misdiagnosed as what other diseases? A general survey of these points must be of considerable value, not only to clinicians but also to pathologists as well. A due consideration of these points is necessary also to the proper understanding of cancer statistics.

I shall now describe the results of investigation on the material of the late period of our Pathological Institute.

Total number of Autopsies.

| | |
|-----------|-------|
| Males | 2,985 |
| Females | 1,596 |
| Uncertain | 11 |
| Total | 4,592 |

Of these, cancer cases were:

| | |
|---------|-----|
| Males | 537 |
| Females | 230 |
| Total | 767 |

The details of investigation on the above material are given in Table C XIV.

Table C XIV.
Comparison of Clinical and Pathological Diagnoses.

| Prim. cancer | Cases | A(%) | B(%) | B'(%) | C(%) | Indeter- minate |
|--------------|-------|------------|-----------|-----------|-----------|--------------------|
| Stomach | 319 | 218(68.99) | 37(11.71) | 12(3.80) | 49(15.51) | 3 |
| Liver | 53 | 31(59.62) | 6(11.53) | 9(17.31) | 6(11.53) | 1 |
| Lung | 53 | 35(67.70) | 12(23.08) | 0 | 5(9.61) | 1 |
| Gall-bladder | 31 | 7(22.58) | 17(54.84) | 0 | 7(22.58) | 0 |
| Oesophagus | 30 | 17(56.67) | 7(23.33) | 3(10.00) | 3(10.00) | 0 |
| Pancreas | 28 | 7(25.00) | 17(60.71) | 0 | 4(14.25) | 0 |
| Uterus | 27 | 23(85.19) | 1(3.70) | 0 | 3(11.11) | 0 |
| Bile-ducts | 22 | 5(22.73) | 14(63.64) | 0 | 3(13.64) | 0 |
| Duodenum | 18 | 0 | 11(61.11) | 1(5.56) | 6(33.33) | 0 |
| Kidney | 16 | 11(68.75) | 3(18.75) | 0 | 2(12.50) | 0 |
| Upper jaw | 15 | 13(86.67) | 2(13.33) | 0 | 0 | 0 |
| Skin | 12 | 9(75.00) | 2(16.67) | 0 | 1(8.33) | 0 |
| Adrenals | 12 | 1(8.33) | 5(41.67) | 0 | 6(50.00) | 0 |
| Bladder | 12 | 7(58.33) | 4(33.33) | 0 | 1(8.33) | 0 |
| Breast | 11 | 7(63.64) | 4(36.37) | 0 | 0 | 0 |
| Pleura | 11 | 3(27.27) | 6(54.54) | 0 | 1(9.90) | 1 |
| Ovary | 9 | 3(33.33) | 6(66.67) | 0 | 0 | 0 |
| Tongue | 8 | 5(62.50) | 2(25.00) | 0 | 1(12.50) | 0 |
| Colon | 8 | 2(25.00) | 2(25.00) | 1(12.50) | 3(37.50) | 0 |
| Rectum | 7 | 6(85.71) | 0 | 0 | 1(14.29) | 0 |
| Larynx | 7 | 5(71.43) | 2(28.57) | 0 | 0 | 0 |
| Neck | 7 | 5(71.43) | 2(28.57) | 0 | 0 | 0 |

| Prim. cancer | Cases | A(%) | B(%) | B'(%) | C(%) | Indeter- minate |
|--------------|-------|------------|------------|----------|------------|--------------------|
| Cecum | 6 | 2(33.33) | 1(16.67) | 2(33.33) | 1(16.67) | 0 |
| Pharynx | 5 | 5(100.00) | 0 | 0 | 0 | 0 |
| Thymus | 5 | 0 | 4(80.00) | 0 | 1(20.00) | 0 |
| Bronchus | 5 | 3(60.00) | 1(20.00) | 0 | 1(20.00) | 0 |
| Testicle | 4 | 4(100.00) | 0 | 0 | 0 | 0 |
| Thyroid | 4 | 2(50.00) | 1(25.00) | 0 | 1(25.00) | 0 |
| Penis | 3 | 3(100.00) | 0 | 0 | 0 | 0 |
| Hypophysis | 3 | 0 | 2(66.67) | 0 | 0 | 1 |
| Ext. genital | 2 | 2(100.00) | 0 | 0 | 0 | 0 |
| Vagina | 2 | 1(50.00) | 0 | 0 | 0 | 1 |
| Prostate | 2 | 2(100.00) | 0 | 0 | 0 | 0 |
| Nasal Cavity | 2 | 2(100.00) | 0 | 0 | 0 | 0 |
| Lip | 2 | 2(100.00) | 0 | 0 | 0 | 0 |
| Mouth Cavity | 1 | 1(100.00) | 0 | 0 | 0 | 0 |
| Peritoneum | 1 | 0 | 1(100.00) | 0 | 0 | 0 |
| Ileum | 1 | 0 | 1(100.00) | 0 | 0 | 0 |
| Uncertain | 3 | | | | | |
| Tota | 767 | 449(59.39) | 173(22.89) | 28(3.70) | 106(14.02) | 8 |

Notes for Table C XIV:—

- A. Cases in which clinical and pathological diagnosis completely agreed.
- B. Cases in which clinical diagnosis of cancer was correct, but incorrect as to the organs involved, nearby organs being erroneously designated. For example, gall-bladder instead of liver, lung instead of pleura, etc.
- B' Cases in which clinical diagnosis was as diseases directly related to cancer, and cancer proved at autopsy. For example, pyloric stenosis, oesophageal stenosis, etc.
- C. Cases in which clinical diagnosis was different but proved to be cancer at autopsy.

Among 767 cases of cancers, those belonging to A, with complete agreement of clinical and pathological diagnoses, are 449 in number, amounting to about 60 per cent (59.39%).

This number include cancers of pharynx (5), testicle (4), penis (3), vulva (2), nasal cavity (2), lip (2), prostate (2), mouth cavity (1), all of which show agreement with clinical and pathological diagnosis in 100% of the cases.

Cancer of uterus, upper jaw, skin, rectum, larynx, neck, etc., give upward of 70% agreement.

Cancer of stomach* (68.99%), kidney (68.75%), lung (67.7%), mammary gland, tongue, etc., belong among the cancers showing fair agreement of the two diagnoses.

From a practical point of view, a part of B and of B' may be classed under A, and if we do this the ratio of correct clinical diagnosis will be considerably higher than given in the table. B', especially, may very well be put together with A, in which case A+B' amounts to more than 477 (63%). In B the diagnosis of cancer is correctly made, only the primary site being given as erroneously as nearby organs. It must be remembered that when cancer tissue is undergoing an extensive proliferation, the accurate determination of the primary site of origin is no easy matter. As long as the diagnosis of cancer proves correct, a slight error as to the site does not much matter from a practical point of view, since it has little to do with the selection of the method of treatment. Viewed in this light, B also may be included under the correct clinical diagnosis. This consideration enables us to add 173 cases more, the total becoming 650, or about 85% of all, for which clinical diagnoses were completely or nearly completely accurate.

*Suzuki reported that 96 out of 135 (=71.1%) gastric cancers were clinically diagnosed as cancers or malignant tumors of the stomach. Of the remaining 39, sixteen (41%) were diagnosed by clinicians as tumors of other organs, while 23 (59%) were found to be gastric cancer only at autopsy.

To conclude, the ratio of correct clinical diagnosis is about 60%, strictly speaking, and about 85% in a more lenient estimation. However, it is to be pointed out that B, inasmuch as the diagnosis as cancer is correctly made, will be classed under group 16 (cancer) of the vital statistics of the Bureau of Census; B', including as it does non-cancerous diseases, will not be included in the same group.

There is another point requiring comment, that is, that the material here dealt with came from various clinical departments of Tokyo Imperial University, where clinical diagnosis must be considered more accurate than may be current among general medical practice. Causes of deaths, especially cancer, given in the vital statistics must be viewed with a certain reservation because of this matter of diagnosis. This caution applies not only to the statistics of Japan but also to those of other highly civilized countries.

Table C XIV shows that duodenal and suprarenal cancers are among those that are most difficult to diagnose. It also shows that cancers of gall-bladder, pancreas, bile-duct, pleura, colon, caecum, etc., are easily misdiagnosed as developing in other nearby organs.

Group C of Table XIV, namely, the cases in which cancer was discovered only at autopsy, are tabulated below in order to show the clinical diagnosis that had been given to these cases.

Table C XV.

Clinical Diagnosis of Cancers Discovered only at Autopsy.

Cancer of stomach. 49 Cases

Clinical diagnosis

| | | | |
|----------------------------|---------|------------------------------|---------|
| 1) Gastric ulcer | 5 Cases | 2) Cirrhosis of liver | 8 Cases |
| 3) Contracted kidney | 5 " | 4) Gastro-intestinal catarrh | 2 " |
| 5) Intestinal tuberculosis | 2 " | 6) Hepatic abscess | 2 " |

| | | | |
|-----------------------------|---------|------------------------|--------|
| 7) Nephritis | 2 Cases | 8) Anaemia | 1 Case |
| 9) Haemorrhagic diathesis | 1 Case | 10) Leucaemia | 1 „ |
| 11) Asthma | 1 „ | 12) Emphysema of lung | 1 „ |
| 13) Edema of lung | 1 „ | 14) Gangrene of lung | 1 „ |
| 15) Haemorrhage of pancreas | 1 „ | 16) Pleuritis | 1 „ |
| 17) Hemiplegia | 1 „ | 18) Aneurysma of aorta | 1 „ |
| 19) Purpura | 1 „ | 20) Ascites | 1 „ |
| 21) Ileus | 1 „ | 22) Myocarditis | 1 „ |
| 23) Tabes dorsalis | 1 „ | 24) Hydronephrosis | 1 „ |
| 25) Other diagnosis | 6 Cases | | |

Cancer of liver. 6 Cases

Clinical diagnosis

| | | | |
|----------------------|--------|--------------------------|--------|
| 1) Peritonitis | 1 Case | 2) Enlargement of spleen | 1 Case |
| 3) Syphilis of liver | 1 „ | 4) Hepatic abscess | 1 „ |
| 5) Atrophy of liver | 1 „ | 6) Cysts of liver | 1 „ |

Cancer of lung. 5 Cases

Clinical diagnosis

| | | | |
|------------------|--------|--------------------|---------|
| 1) Indeterminate | 1 Case | 2) Nephritis | 1 Case |
| 3) Bronchitis | 1 „ | 4) Other diagnosis | 2 Cases |

Cancer of gall-bladder. 7 Cases

Clinical diagnosis

| | | | |
|--------------------|---------|----------------------|--------|
| 1) Cholelithiasis | 2 Cases | 2) Cholangitis | 1 Case |
| 3) Peritonitis | 1 Case | 4) Contracted kidney | 1 „ |
| 5) Other diagnosis | 1 „ | 6) Indeterminate | 1 „ |

Cancer of bile-ducts. 3 Cases

Clinical diagnosis

| | | | |
|-------------------|--------|----------------|--------|
| 1) Nephritis | 1 Case | 2) Cholangitis | 1 Case |
| 3) Cholelithiasis | 1 „ | | |

Cancer of pancreas. 4 Cases

Clinical diagnosis

| | | | |
|-----------------------|--------|--------------------|--------|
| 1) Cirrhosis of liver | 1 Case | 2) Hepatic abscess | 1 Case |
| 3) Ulcer of duodenum | 1 „ | 4) Ileus | 1 „ |

Cancer of duodenum. 6 Cases

Clinical diagnosis

| | | | |
|--------------------|---------|----------------------|--------|
| 1) Cholelithiasis | 3 Cases | 2) Ulcer of duodenum | 1 Case |
| 3) Other diagnosis | 2 „ | | |

Cancer of colon. 3 Cases

Clinical diagnosis

| | | | |
|----------------|---------|------------------|--------|
| 1) Peritonitis | 2 Cases | 2) Gastric ulcer | 1 Case |
|----------------|---------|------------------|--------|

Cancer of esophagus. 3 Cases

Clinical diagnosis

| | | | |
|-----------------------|--------|-----------------------|--------|
| 1) Ulcer of esophagus | 1 Case | 2) Cirrhosis of liver | 1 Case |
| 3) Other diagnosis | 1 „ | | |

Cancer of uterus. 3 Cases

Clinical diagnosis

| | | | |
|--------------------|--------|-------------|--------|
| 1) Gastric catarrh | 1 Case | 2) Senility | 1 Case |
| 3) Indeterminate | 1 „ | | |

Cancer of kidney. 2 Cases

Clinical diagnosis

| | | | |
|---------------------------------|--------|------------------|--------|
| 1) Hematoma in abdominal cavity | 1 Case | 2) Indeterminate | 1 Case |
|---------------------------------|--------|------------------|--------|

Cancer of adrenals. 6 Cases

Clinical diagnosis

| | | | |
|---------------------------------|---------|------------------|--------|
| 1) Hematoma in abdominal cavity | 1 Case | 2) Gastric ulcer | 1 Case |
| 3) Pulmonary tuberculosis | 1 „ | 4) Chrorysis | 1 „ |
| 5) Other diagnosis | 2 Cases | | |

Cancer of urinary bladder. 1 Case

Clinical diagnosis

- 1) Nephritis 1 Case

Cancer of cecum. 1 Case

Clinical diagnosis

- 1) Contracted kidney 1 Case

Cancer of rectum. 1 Case

Clinical diagnosis

- 1) Hepatic abscess 1 Case

Cancer of tongue. 1 Case

Clinical diagnosis

- 1) Syphilis of tongue 1 Case

Cancer of pleura. 1 Case

Clinical diagnosis

- 1) Hemothorax 1 Case

Cancer of thymus. 1 Case

Clinical diagnosis

- 1) Thrombosis in v. cava 1 Case
superior

Cancer of vagina. 1 Case

- 1) Senility 1 Case

Cases contrary to the above, namely, those in which the clinical diagnosis of cancer was disproved and was found to be some other disease by pathological examination, are also to be looked into. Only 31 such cases are recorded among 4,592 autopsies performed during the late period of our Pathological Institute. These 31 cases were: 16 gastric, 7 hepatic, 2 intestinal, and 1 each of gall-bladder, bile-duct, rectal, pancreatic, oesophageal, and uterine cancers. The

pathological diagnoses of these cases misdiagnosed as cancers are given in Table C XVI.

Table C XVI.
Pathological Diagnosis of Diseases Clinically
Misdiagnosed as Cancer.

| Nos. of Cases 31. | | | |
|----------------------------|--|--|-------|
| Clinical Diagnosis | | Pathological Diagnosis | Cases |
| I) Cancer of Stomach | | 1) Ulcer | 6 |
| 16 Cases | | 2) Hour-glass contraction | 1 |
| | | 3) Pylorus stenosis | 1 |
| | | 4) Catarrh | |
| | | 5) Dilatation | 2 |
| | | 6) Metastases of another malignant tumor | 2 |
| | | 7) Others | 3 |
| II) Cancer of Liver | | Chirrhosis of liver | 4 |
| 7 Cases | | Icterus | 2 |
| | | Liver abscess | 1 |
| III) Cancer of Colon | | Ulcer of rectum | 1 |
| 2 Cases | | Dyscrasie | 1 |
| IV) Cancer of Gall-bladder | | Icterus | 1 |
| V) Cancer of Bile-duct | | Stenoses of bile-duct | 1 |
| VI) Cancer of Rectum | | Megacolon | 1 |
| VII) Cancer of Pancreas | | Senility | 1 |
| VIII) Cancer of Oesophagus | | Oesophagitis chronic | 1 |
| IX) Cancer of Uterus | | Endometritis chronica | 1 |
| 1 Case each | | | |

CHAPTER IX. (Addendum)

ON MALIGNANT TUMORS OTHER THAN CANCERS.

As stated at the outset, this paper deals with cancers only and does not include other malignant tumors. Although non-cancerous malignant tumors include some that are fundamentally of the same biological nature as cancers, there are others that are different and are closely related to inflammatory processes and tissue hyperplasia, and it is difficult to draw a sharp line among these. There is also a difference of opinion as to the propriety of including some of these growths among true tumors. It is for this reason that I decided it to be more convenient scientifically, as well as practically, to limit my observations to cancers only. However, since the material of the late period of our Pathological Institute (1915-1932) has been investigated as to the malignant tumors other than cancers, a table may be presented here enumerating these: —

Sarcoma (Fibroma, myxoma, lipoma, chondroma, osteoma, as well as mixed types are included).

| | | |
|---|----------|----------------|
| (I) Those arising from bone marrow or periosteum | 21 | } Total 104 |
| (II) Those arising from skin and subcutaneous tissue, including 3 melanosarcoma | 13 | |
| (III) Those arising from mouth and nasal cavities, or from upper jaw | 13 | |
| (IV) Kidney and suprarenal gland | 16 | |
| (V) Testicle | 4 | |
| (VI) Ovary | 4 | } |
| (VII) Eye (melanoma) | 4 | |
| (VIII) Other sites | 29 | |
| (IX) Mediastinum, thymus | 13 | |
| (X) Malignant lymphoma and lymphosarcomatosis | 24 | |
| (XI) Tumors of central nervous system. (Colloid tumors, colloid sarcoma, neuroma, etc.) | 42 | |
| Total | 183 | |
| | (Males | 117) |
| | (Females | 66) |

Part IV.

Considerations of the Entire Results and Conclusions.

CHAPTER I.

ON THE POINTS TO BE CONSIDERED IN COMPARATIVE OBSERVATION ON CANCER STATISTICS.

Up to this point we have given detailed accounts of vital statistics in Part I, statistics based on clinical diagnosis in Part II, and statistics based on autopsy material in Part III. Before entering into the consideration all together of these statistics, which have so far been described separately, it seems necessary to touch upon several points which should be taken into full consideration in the interpretation of the statistical data.

Each of the three kinds of statistics above referred to have their own merits and demerits and none of them can be dispensed with in the proper understanding of the actual state of affairs as to the development of cancer. Such understanding can be hoped for only after careful comparison of the three kinds of statistical data and by drawing judicious deductions. In comparing data among different countries or among different cities erroneous judgment may result if we unconditionally adopt all the figures reported by various authors. It is desirable that all the material forming the basis of the statistics be treated under an identical condition, but this ideal cannot be realized in different countries where various conditions are so divergent. This situation forces us to work with statistical figures brought together under relatively similar conditions in marking our comparative observations.

How nearly the statistics based on official death certificates represent the actual state of affairs is no small question. In this form of statistics special caution is needed for internal cancers. As I have already discussed in detail in Chapter 8, Part III, of this paper, there are no small number of cases where, outside of

mis-diagnosis, the diagnosis as "cancer" was avoided through the request of the patient or his family, and other related diagnosis or the name of the main pathological condition was put down in the death certificate—for example, pylorus stenosis instead of pylorus cancer. However, from a practical point of view, the factor of greatest importance in influencing the result of vital statistics is the relative abundance of cases where the cancers of internal organs have not been clinically detected. This is clearly shown by the material of the late period of our pathological institute (1915-1932), which shows, already described, that only about 60 or at most 80 per cent of the total of 767 cancers verified at autopsy are clinically diagnosed as cancer (Chapter 8, Part III).

According to Professor Inada, the following divergent conditions prevailed for 80 cancer autopsies of his clinic.

1. Those in which clinical and pathological diagnoses agreed 59 = 70.2%
2. Cancer correctly diagnosed but the site erroneous 9 = 10.7%
3. Cancer found only at autopsy, clinical diagnosis being different 12 = 14.3%
4. Clinical diagnosis of cancer disproved by autopsy 4 = 4.8%

The above is an example showing a rather high rate of correct diagnosis, but even here we find that only about 70% of the cancers are so diagnosed clinically. It is only to be expected that the ratio is considerably lower than this when it comes to the diagnosis of "cancer" by the general practitioners of the country as a whole. This means that the actual number of cancers must be somewhat more than is given in the vital statistics.

In our own statistics, as in those of foreign countries, there is a larger number of cases where cancer was found at autopsy of a patient clinically diagnosed as suffering from something else, than

R. Inada: On the diagnosis and therapeutics of the internal diseases (Japanese). Jap. Journal of Internal Medicine. Vol. 19, No. 1, 1931.

cases where the clinical diagnosis of cancer was not substantiated at autopsy. For example, of the total of 4,585 autopsies performed during the late period of our pathological institute, there were only 31 cases where non-cancerous diseases were erroneously diagnosed as cancer, while as many as 105 cases were found in which cancer was apparent at autopsy in spite of the clinical diagnosis of some other disease. Wells¹⁾ reports 544 malignant tumors out of 3,172 autopsies, and 36% of the tumors were correctly diagnosed clinically. There were 178 cases (=32.7%) in which cancer was found only at autopsy, and only 33 cases in which autopsy did not show cancer in spite of the clinical diagnosis of cancer.

According to Lubarsch's²⁾ report, embracing the autopsy cases of the entire Germany for 1920-1921, there were 32.44% of misdiagnosis among the total 8,361 cancers. Bashford³⁾ (28.2%), Reichelmann⁴⁾ (22%), etc., also pointed out that there is no small percentage of error in clinical diagnosis of cancer.

Such being the case, it seems safe to put the actual number of cancer deaths at slightly higher figures than annual statistics in all the countries. Even today when there is a gradual increase in the number of complete cures, due to the improvement in therapeutics, the number of cancer deaths show a tendency to increase year after year for most countries. The major reason for this phenomenon may rationally be looked for in the improvement of diagnostic methods. One should not be unduly alarmed by the figures given in vital statistics.

It is superfluous to state that a rational comparison of statistics is possible only among statistics of the same kind. For example, it is meaningless to compare pathological statistics of one place with clinical statistics of another place. This is especially true as

¹⁾Wells, Relation of Clinical to Necropsy Diagnosis in Cancer. J.A.M.A., 1932.

²⁾Lubarsch, Med. Klinik, 20, 1924.

³⁾Bashford, Scient. Rep. Imperial Cancer Research Fund. 1905.

⁴⁾Reichelmann, Berlin. Kl. Wochenschr. 39, 1902.

regards the cancers of mammary gland, uterus, buccal cavity, skin, etc., including a large number of patients but at the same time with a fair proportion of complete cures. For this reason comparison of cancer among different countries and cities must be made separately as to vital statistics, clinical statistics, and statistics based on autopsy material, and then the three kinds of statistics should be correlated and compared, aiming at a deduction which may come as nearly as possible to the actual fact.

Table D I.

Number of Autopsies and Cancer Cases in the Late Period
of Our Pathological Institute (1915-1932) arranged
according to the Clinical Departments from
which they came.

| | Autopsies | | | Cancers | % |
|--------------------------|-----------|---------|-------|---------|--------|
| | Males | Females | Total | | |
| Internal medicine | 1,419 | 645 | 2,064 | 407 | (19.6) |
| Surgery | 327 | 188 | 515 | 137 | (26.6) |
| Gynecology | — | 177 | 177 | 20 | (11.3) |
| Pediatrics | 307 | 174 | 481 | 11 | (2.3) |
| Oto-rhinology | 69 | 24 | 93 | 19 | (20.3) |
| Dermatology and Urology | 53 | 17 | 70 | 21 | (30.0) |
| Psychiatrics | 34 | 14 | 48 | 6 | (12.5) |
| Ophthalmology | 9 | 2 | 11 | 0 | * — |
| Dentistry | 3 | 3 | 6 | 3 | (50.0) |
| Orthopedic surgery | 15 | 10 | 25 | 1 | — |
| Radiology | 0 | 1 | 1 | 1 | — |
| Extra-University Clinics | 749 | 341 | 1,090 | 133 | (12.2) |
| Undeterminable | — | — | 11 | 8 | |
| Total | 2,985 | 1,596 | 4,592 | 767 | |

The statistics dealt with in Part I of this paper are those for the entire Japan based on the annual vital statistics, and while there is nothing to be desired as to the unbiassedness, they must be expected to include some diagnostic errors. The statistics based on autopsy material, on the contrary, are most accurate as to the diagnosis, but they are of necessity limited as to the scope of the material. This point has been touched upon already in Part III, Chapter I, but the following table may serve to further illustrate the situation.

As may be seen from the above table, there is a very large number of autopsy cases coming from the internal clinic, and they amount to one-half in the male and over one-third in the female of all the cases. In consequence, a large number of cancer cases also fall in this department, and in fact more than one-half of all cancers (407 out of 767) came from internal clinics. The next largest number of cancer cases came from clinics outside of our university, and as I have already stated, these cases mostly belonged to the field of internal medicine. Such being the case, it is natural that the cancers of internal organs, to be dealt with in internal clinics, constitute the majority of cancers in the statistics of our pathological institute. On the other hand, there is an increasing tendency for cancer patients coming to internal clinics to be transferred to be treated surgically or radiologically. It develops, then, that statistics of the present time, say of the surgical department, are considerably different from those of thirty years ago. There has been a marked increase in recent years in the number of gastric, rectal and other internal cancers being sent to surgical clinics.

Uterine cancer which ranks first among cancers in the female, according to clinical statistics, falls to second rank in autopsy statistics with only 27 cases, which is considerably less than 77 cases of gastric cancer, which now ranks first. This is due to the fact that the majority of uterine cancers are now treated in gynecological departments, and that this department sent a very small number

of autopsy cases, namely, 177. This is only one-sixth of the female cases coming from internal clinics and clinics outside of the university. A consideration of these circumstances leads us to believe that uterine cancer is really very abundant in Japan, and it would be a great mistake to conclude, on the basis of autopsy statistics alone, that in the female gastric cancer ranks first and uterine cancer second.

Similar relations probably hold for other internal cancers, although I shall avoid discussion on these points. Suffice it to emphasize here that in the consideration of the relative frequency of cancers in various organs it is of primary necessity to critically examine into the nature of the statistical material involved.

CHAPTER II.

CANCERS OF THE DIGESTIVE SYSTEM, ESPECIALLY
GASTRIC CANCER.

Cancers of the digestive system including the digestive tube extending from the mouth cavity to anus, and digestive glands such as salivary gland, liver, pancreas, etc., and excretory tubes, when combined, amount to an enormous number, and especially in the male the greater part of all cancers belong to this general category. Although this relation holds for various countries the degree to which the cancers of digestive system predominate in all cancers, and the ratio of cancers of this system to cancers of other organs may well be expected to differ among different countries. Especially, observations on individual organs of the digestive system may show various points of difference according to different countries. The frequency of gastric cancer, which is most abundant among cancers in any country, is not the same for different countries, and this is true also of cancers of oesophagus, rectum, liver, and other important sites. I shall first investigate how abundant are the cancers of the entire digestive system in Japan.

Vital statistics yield the following information:—

By adding up cancers of mouth cavity (43), stomach and liver (44), oesophagus (44'), and intestine, rectum and peritoneum (45) showing in the Japanese Government vital statistics for 1930 (Table A V), we obtain

| | |
|---------|--------|
| Males | 20,379 |
| Females | 12,928 |

These numbers amount to about 93% for males and 59% for females, against the total cancers, which is 21,793 for males and 21,743 for females.

Cancers of peritoneum do not belong to the digestive system, but this does not materially modify the above figures since peritoneal cancers are very rare. It is also irrational to include

mouth cavity (43) among digestive organs, but here again the number of cancers of this site is small. Even if we exclude the mouth cavity entirely, we still find that over 89% in the male and about 58% in the female of all cancers belong to the digestive system, showing the real abundance of cancers in this system. In the female, mammary and uterine cancers form a large bulk, which naturally reduces the ratio for digestive system quite materially.

Taking up the *statistics based on clinical diagnosis*, we again find, as already minutely described in Part II of this paper, that the cancers of digestive system are in the overwhelming majority. For the figures appertaining to each clinical department the reader is requested to consult that part of this paper. The summarized compilation including the actual number of cancers for each organ, its ratio against the total cancers, and distribution to sex groups are shown in Table B IX. In Table B X the same data are retabulated according to the International System of classification.

A glance at these two tables suffices to show the superabundance of the cancers of the digestive system. As Table B X shows, the total figures in the male for categories (43), (44) and (45) amount to 10,198, which is about 88% of the total cancers in the male (11,608). Even if we exclude (43), cancers of mouth cavity, the figure still comes up to 9,146, corresponding to about 79% of total cancers in the male.

In the female, the total figures for categories (43), (44) and (45) reaches 3,532, which is slightly over 38% of the total cancers in that sex (9,177). It is a noteworthy fact that the cancers of the female reproductive system, mainly of the uterus, number 4,294 (47%), thus making up the majority of cancers in the female, superceding the cancers of digestive system. The figures for uterine and mammary cancers and their ratios against total cancers are given higher in these data than in the vital statistics, but this discrepancy is no doubt due to the fact that the former deals with cancer morbidity, while the latter is concerned with cancer mortality.

The more important among the cancers of the digestive system, next to gastric cancer, are, in the male, those of oesophagus, rectum, liver, tongue, intestine, mouth cavity, pharynx, pancreas, gall-bladder, etc., in the order of importance. In the female, next to stomach, come rectum, liver, oesophagus, intestine, tongue, gall-bladder, mouth cavity, larynx, pancreas, etc., in the order given. In both sexes it is worthy of note that the cancer of rectum is in a larger number than the total cancers of all other parts of the intestine, and that hepatic cancers are numerous. The fact that oesophageal cancer is strikingly more frequent in the male than in female should also be especially pointed out.

Autopsy statistics, as fully described in Chapters 2 and 3 of Part III of this paper, also demonstrate the remarkable abundance of cancer of the digestive system (Tables C II, III, IV, and V).

As may be seen in Table C IV, the total in the male of cancer of stomach (526 or 47.7%), liver 86, oesophagus 70, bile-duct 34, gall-bladder 33, rectum 31, pancreas 30, tongue 20, duodenum 18, pharynx 7, caecum 7, colon 5, mouth cavity 5 etc. amount to 856, corresponding to 77.6% of all cancers which is 1,102.

In the female, the total cancers number 476, of which 278 or 58.4% belong to the digestive system, including stomach, gall-bladder (32), liver rectum, oesophagus (16), pancreas, duodenum caecum etc.

In the statistics based on autopsy materials also, cancer of the liver comes highest next to gastric cancer in both male and female.

The three sorts of statistics considered above may be sufficient to give a general idea as to how abundant are the cancers of the digestive system. It now becomes necessary to see what proportions of these cancers belong to (A) the digestive tube proper, and to (B) digestive glands and their ducts. Tables D II and D III are prepared to give actual numbers and ratios based on clinical and autopsy statistics respectively.

Among the cancers of digestive organs, hepatoma has a specially important significance in Japan, because of its unusual abundance, and it will be discussed in a separate chapter. Cancers of pancreas and of gall-bladder show far higher ratios in autopsy statistics (Table D III) than in clinical data (Table D II), but the discrepancies are explainable on the grounds of the difficulty in clinical diagnosis of these cancers, and also of the fact that the autopsy cases are mainly derived from internal clinics to which these cancers are generally referred.

(A) In the digestive canal, gastric cancers amount to 6,526 (56.02%) in male and 2,208 (24.32%) in female, both in D II, while in D III, the figures are 526 (47.7%) for male and 148 (31.09%) for female.

Oesophageal cancers are, in D II, 751 (6.45%) for male and 159 (1.75%) for female, and in D III, 70 (6.35%) for male and 16 (3.36%) for female, the ratios being about the same for D II and III. Oesophageal cancer is again shown to be far more abundant in male than in female.

The ratios between gastric and oesophageal cancers are, according to clinical statistics, 6,526 gastric cancers to 751 oesophageal cancers, i.e., 8.7:1.0, in the male. In the female there are 2,208 gastric cancers to 159 oesophageal cancers, i.e., 13.9:1.0. These ratios again indicate that oesophageal cancers are relatively scarce in the female.

In autopsy statistics, we find in the male 526 gastric cancers to 70 oesophageal cancers, that is, 7.5:1.0; and in the female 148 gastric to 16 oesophageal cancers, or the ratio of 9.3:1.0.

As regards the cancers of intestinal canal, clinical statistics place the rectal cancer to be more than three times as numerous as the total cancers of all other parts of the intestine. The actual figures are 720 rectal to 234 intestinal cancers for male, and 345 rectal to 114 intestinal cancers for female. This relation is entirely changed when we come to the autopsy statistics, which give 31

rectal to 32 intestinal cancers for males, and 20 rectal to 18 intestinal cancers for females, the rectal cancers being only slightly more abundant than cancers of the rest of the intestine. Rectal cancers are more easily diagnosed by clinicians than cancers of other parts of the intestine, and it is probable that this fact may account for the discrepancy observed. As already stated in Chapter 8, Part III, cancers of such parts as duodenum are very difficult to diagnose clinically.

In B IX, the cancers of mouth cavity (161) and of pharynx (71) are in fair numbers in the male, but are scarce in the female. The same is true also in C.

(B) Among the *cancers of digestive glands* and their ducts, excluding hepatoma, pancreatic cancer comes second in the male with 65, being more numerous than gall-bladder cancer (54), but in the female, cancers of gall-bladder (45) are far more abundant than those of pancreas (19). This relation is more clearly shown in autopsy statistics, which place in the female gall-bladder (32) first, liver (20) second, pancreas (11) third, and bile-duct (10) fourth.

I shall next consider gastric cancer alone. The figures appertaining to the subject in clinical and autopsy statistics (Tables B IX and C IX) are:

| | | Total cancers | Gastric cancers | Ratio |
|---------------------|---------|---------------|-----------------|-------|
| Clinical statistics | Males | 11,608 | 6,526 | 56.02 |
| | Females | 9,174 | 2,208 | 24.32 |
| | Total | 20,782 | 8,734 | 42.13 |
| Autopsy statistics | Males | 1,104 | 526 | 47.64 |
| | Females | 475 | 148 | 31.11 |
| | Total | 1,579 | 674 | 42.68 |

These two sets of statistics agree very closely in giving the ratio of gastric cancers to total cancers as 42% plus. According

to Miyake's report, during twenty-three years between 1904 to 1927, at the Kyushiu Imperial University there were altogether 4,601 autopsies, of which 623 were cancer cases, and 224 of these latter had gastric cancers (36.1%). Cramer's¹⁾ data (Table D II) seem to indicate that gastric cancers are not quite as frequent in England as in other European countries, America, Australia, etc. For some reason, my statistical figures give the ratio for Japan approximately the same as that for America, Australia, etc. Gastric cancers are fairly frequent in Korea, but are very scarce in China, a very conspicuous point (see Part II, Chapter 8). Whether this is to be accepted as a fact must be determined by further investigations of adequate data, but it does seem to me that the Chinese food is generally easily digested and thus causes less wear and tear on the gastric mucosa. I am inclined to think that gastric cancers are actually relatively infrequent among Chinese.

Table D II.
Gastric Cancer in various Countries (According to Cramer).

| | Cancer deaths per 100,000 of population | Total cancer deaths | Deaths from gastric cancer | Ratio of gastric cancer to total cancers |
|----------------------|---|------------------------|-------------------------------|---|
| England and Wales | 118 | 26,013 | 5,774 | 22.2 |
| U.S.A. | 97.5 | 48,848 | 20,970 | 42.8 |
| Australia | 87.3 | 3,120 | 1,333 | 42.7 |
| Holland | 118 | 4,379 | 2,427 | 55.5 |
| Bavaria | 115 | 4,106 | 2,366 | 55.8 |
| Switzerland | 135 | 2,654 | 1,503 | 55.8 |
| Norway | 123 | 1,679 | 867 | 51.5 |
| Sweden | 120 | 3,214 | 1,944 | 60.5 |
| Czecho-Slovakia | 107 | 3,611 | 2,381 | 60.0 |

¹⁾ Cramer. Vergleichende statistische Betrachtungen über den Magenkrebs. Zeit. f. Krebsforsch., XXXIV, 1931.

According to the reports of Abe¹, cancer is generally infrequent in Java, but gastric cancers are especially few in number. Hoffman also remarked the relative infrequency of cancer in the tropics, but it must be remembered that statistics for tropical countries are not very accurate. Moreover, the average span of life seems to be comparatively short in tropical countries, with the result that many persons die without reaching the so-called cancer age. All these facts make it difficult to decide whether cancers are really infrequent in the tropics. However, the abundance of hepatoma, and scarcity of gastric cancer in the Dutch East Indies are especially noted in the text book of tropical medicine by de Langen and Lichtenstein², who state that among 1,014 cases histologically diagnosed as cancers during 1927-1932, 775 were Javanese (423 males and 326 females), and among these latter were found only very few cases of gastric or oesophageal cancers. Gastric cancer was found only in 2 males and 1 female, oesophageal cancer occurred in 2 males only, with no case among females. Contrary to this situation, as many as 38 males and 5 females, that is, a total of 43 cases were found to have hepatoma. This is a very conspicuous fact, and was justly given special mention by the authors, who also refer to another striking fact that cancer of the skin, especially of foot and of skin are quite abundant. Even though gastric cancers are relatively scarce in China, Java, etc., it seems from general observation that the cancers of the digestive system are in an overwhelming majority compared with cancers of all the other parts of the body, and on this point all the statistics agree. Even if we add malignant tumors other than cancer we still find that the digestive system shows a far larger figure than the grand total of respiratory, vascular, urinary and nervous systems (uterine

¹ Chuzo Abe. On the peculiarity in the morbidity of several diseases in the Dutch East Indies (Java). Nisshin Igaku (Japanese) XXII, 1932.

² C. D. De Langen en Lichtenstein. Leerboek der Tropische Geneeskunde. 1933.

and mammary cancers in the female being excluded). That, except in one or two countries, gastric cancer is especially abundant among cancers of the digestive system is an outstanding phenomenon which can be explained only by the irritation theory, but not by other theories of the genesis of cancer. There is nothing like the digestive organs that are artificially forced to perform all sorts of irregular and often very severe tasks. The quality and quantity of various foods and drinks, including the method of preparing these, are so extremely varied in different countries, districts, homes, and even among individuals that no organ in the body is subjected so constantly to so much chemical, mechanical, thermal, and other irritation as the digestive organs. The high cancer incidence of the stomach may be the natural consequence of the fact that food and drink are held here for a long period of time.

Ulcer, chronic inflammation, and other precancerous conditions are also prevalent in the digestive system, and presumably for the same reason as the frequency of cancer in these organs.

CHAPTER III.

ON HEPATIC CANCER.

The fact that hepatic cancer is especially abundant in Japan, constituting an important category among cancers of internal organs, has been referred to repeatedly. From the histological point of view, those prevalent in Japan are not cholangioma but hepatoma, arising from the parenchymatous cells of the liver. Among foreign writers some have tried to connect the abundance of hepatic cancer in the Orient with the liver parasites (liver fluke), but this is a grave error. We know that hepatic cancer very rarely follows the liver fluke infestation and when cancer does develop it is always cholangioma and is never hepatoma. It is well known among pathologists that hepatoma is far more frequent than cholangioma in Japan, contrary to the condition in European countries.

Three different modes of the development of hepatoma may be distinguished. The first of these is based on the congenital developmental disturbance, and this form of hepatoma is only seen in infants, newborn up to four or five years of age, sometimes appearing as a mixed type containing tissue elements of sarcoma, chondroma, etc. The second group of hepatoma occurs in persons of middle age upward and usually grows monocentrically. The cause and the mechanism of development of this type of hepatoma are very difficult to surmise. The third group is the most commonly encountered, and it develops secondarily, supervening upon various cirrhotic changes in the liver, that is, with liver cirrhosis as pre-cancerous lesion. The majority of hepatomas belong to this type.

The actual frequency of hepatic cancer is not determinable from the data given in Part I, where figures derived from vital statistics do not refer to hepatic cancer as a single item. However, it is quite safe to conclude that the primary hepatic cancer is prevalent in Japan in view of the detailed data in Part II and Part

III. As stated in Part II, in practically all (16 out of 17) of the internal clinics of Universities, hepatic cancer ranks second, following gastric cancer, in point of frequency, and in the single exceptional clinic it ranks third. It is not difficult to suppose that some of these liver cancers might have been metastatic deposits, instead of being primary growths, but even then we cannot fail to note a very striking difference when compared with clinical statistics of foreign countries. In the total of all the clinical departments (Table B IX), liver cancer ranks fourth with 711 (6.1%) in the male, sixth with 210 (2.36%) in the female, and fifth in both sexes combined with 925 (4.46%).

The most accurate demonstration of the abundance of hepatic cancers comes from autopsy statistics, where liver metastasis can be very completely eliminated from the figure.

In the statistics of the later period of the Tokyo Imperial University Pathological Institute (Table C VI) hepatic cancers are 44 in male, 9 in female, and 53 in total. This is slightly more than the number in which lung cancers are found, and it places liver cancer second in frequency next to gastric cancer, figures for which are 242 in male, 77 in female, and 319 in both sexes combined. The Fukuoka statistics also give second rank to hepatic cancer, and the Kyoto fifth rank. This is in a most striking contrast to the state of affairs in Europe and America. As already discussed in detail in Chapter 4, Part III, hepatic cancer is so exceedingly rare in Dresden, Kiel, Göttingen, etc., as to take ninth to thirteenth rank in male and twelfth to nineteenth rank in female. It is among the rarest of cancers of internal organs. In two Russian cities, Charkow and Leningrad, hepatic cancer is more frequent than in the German cities just mentioned, and in Charkow it ranks third and in Leningrad fifth among the cancers in the male. Even these conditions show a clean cut difference from the data for Japan (Chapter 4, Part III).

Hepatoma is abundant in Korea, as I stated in Part II. In

China the paucity of statistical data prevents any definite conclusion but the available evidence (Chapter 5, Part II) both in literature and of my own seems to indicate that primary hepatic cancer is not very frequent.

The development of hepatoma as a sequel to liver cirrhosis is a matter of our frequent observation. According to the monographic work of Josselin de Jong^{*} (First Report of International Society of Geographical Pathology, 1931) the ratio of cancer development from cirrhotic lesions varies markedly among different countries, and also among different cities of the same country. These divergent findings would seem to be due to a difference in the nature of the statistical data. Professor de Jong gives the following localities as giving no case of cancer development from cirrhotic lesion: Estland, England, Innsbruck, Graz, Lwow, Portugal, Russia, Cuba, Canada, etc., and as giving few cases; Sweden, Switzerland, France, Hungary, U.S.A., and as giving high ratios; Mannheim, 6%; Holland, 6%; Philadelphia, 6.6%; Norway, 7%; Lettland, 8%; Budapest, 12.5%; Japan, 15.7%; and Dutch East Indies, 21%.

The fact that in the Dutch East Indies gastric cancer is scarce while hepatic cancer is abundant has been especially noted by De Langen.

Liver cirrhosis as a precancerous change is conceivably related etiologically with syphilis and alcoholism.¹⁾ Among liver parasites, *Schistosomum japonicum*, though rarely, gives rise to cirrhosis which precedes hepatic cancer. We also observed several cases in which hepatoma developed in stagnation cirrhosis due to the obstruction of *Venae hepaticae* and *Vena cava inferior*.

The abundance of hepatoma in Japan, thus made ever so clear, places it among the important cancers of internal organs. This fact offers an interesting subject for further investigation.

^{*} Comptes rendus de la première conférence internationale de Pathologie géographique. 1931.

¹⁾ Nagayo, M. Special Report on Liver Cirrhosis. Transactions of Japanese Pathological Society. Vol. IV, 1914.

CHAPTER IV.

OESOPHAGEAL, INTESTINAL AND RECTAL CANCERS.

Detailed discussion has already been given in the preceding pages on cancers of the digestive system, especially of stomach, but among cancers of the other parts of the digestive system, those of the oesophagus, intestine and rectum are among the important internal cancers. A study of the frequency, distribution in sex groups, and comparison of these data with foreign statistics may conceivably be expected to yield some interesting suggestion as to the etiology of cancers, and it is for this reason that the problem is now especially dealt with here.

The International vital statistics mentions oesophageal cancer as an independent category, but rectal and intestinal cancers are combined with peritoneal cancers, figures for each of these types of cancer being undeterminable. Such being the case, we are forced to consider the problem before us on the basis only of our data given in Part II and Part III of this paper. However, the data of Part III, namely, the autopsy statistics, are somewhat limited as to the scope, so we shall lay main emphasis on the various B tables, especially the composite statistics of Table B IX. The figures appearing in this Table may be regarded as representing the actual condition fairly accurately. The term "intestinal cancer" is used here to cover all the cancers of the intestinal canal, excluding rectum and anus.

I shall first examine the statistics of clinical departments where oesophageal, intestinal and rectal cancers are treated in comparatively large numbers (internal clinics, general hospitals, surgical clinics, oto-rhinological clinics, dermatological clinics, hospitals for gastro-intestinal diseases, clinical department of the Japanese Society of Cancer Research, etc.), and shall finally offer explanations concerning the figures in Table B IX, which represent the total results of all the clinical departments.

Table D III.

| | Males | | | | Females | | | |
|---|-------------|------------|-------------|---------------|------------|------------|-------------|---------------|
| | Oesophagus | Intestine | Rectum | Stomach | Oesophagus | Intestine | Rectum | Stomach |
| General hospitals B I | 26 (6.06) | 2 (0.46) | 26 (6.06) | 254 (59.21) | 2 (0.41) | 0 | 19 (3.88) | 126 (26.51) |
| Internal clinics B II | 243 (6.06) | 44 (1.1) | 122 (3.04) | 2,733 (63.12) | 49 (3.54) | 22 (1.52) | 49 (3.54) | 940 (67.91) |
| Surgical clinics B III | 141 (3.38) | 165 (3.67) | 482 (11.56) | 2,389 (57.27) | 30 (1.29) | 76 (3.26) | 240 (10.69) | 814 (33.94) |
| Oto-rhinological clinics B V | 183 (18.39) | — | — | — | 46 (14.74) | — | — | — |
| Dermatological clinics B VI | 3 (1.01) | — | 1 | 1 | — | — | 1 | 1 |
| Hospitals for gastro-intestinal diseases B VII | 108 (8.41) | 22 (1.71) | 43 (3.35) | 1,024 (79.75) | 23 (6.25) | 15 (4.08) | 13 (3.55) | 239 (78.53) |
| Clinical Dept. of Japanese Soc. Cancer Research B VIII | 47 (10.6) | 2 (0.45) | 46 (10.6) | 126 (28.3) | 9 (1.3) | — | 14 (1.9) | 38 (5.3) |
| Total B IX | 751 (6.45) | 234 (2.01) | 720 (3.18) | 6,526 (56.02) | 159 (1.73) | 114 (1.26) | 345 (3.8) | 2,208 (24.32) |

Table D III shows the actual number and ratio against all the cancers (in parentheses) of the three forms of cancers under consideration, classifying them according to various clinical departments. Similar figures for gastric cancer are also inserted for the purpose of comparison.

As may be seen from this Table, in the male, oesophageal and rectal cancers are in about the same number in general hospitals and in the clinical department of the Japanese Society of Cancer Research, but the former is in a far larger number than the latter in internal clinics and in hospitals for gastro-intestinal diseases. There are some oesophageal cancers in oto-rhinological clinics but no rectal cancers. On the contrary, rectal cancer is more than three times as numerous as oesophageal cancer in surgical clinics. When all figures are combined together we find that oesophageal cancer (751-6.45%) and rectal cancer (720 6.18%) are in about the same number (B IX).

Intestinal cancer is less frequent than rectal cancer in all the clinical departments, and in the total the figures for the former (234 2.01%) amount to only about one-third of that for the latter.

Turning our attention to the female, we find in Table B IX that intestinal cancers (114 1.26%) amount also only to about one-third of rectal cancers (345 3.80%). Oesophageal and rectal cancers are in the same number in internal clinics, but in oto-rhinological clinics, hospitals for gastro-intestinal diseases, etc., oesophageal cancer is in a larger number than rectal cancer. In surgical clinics rectal cancers amount to about eight times the number of oesophageal cancers. In the total it turns out that rectal cancer (159-1.73%) is more than twice as frequent as oesophageal cancer, the ratio being 159:345.

As stated above, rectal cancer is slightly more frequent in males than in females, but the difference is slight. The same relation holds also for intestinal cancer. Oesophageal cancer, however, is decidedly more frequent in the male than in the fe-

male, with a very considerable difference. The same is true of gastric cancer, and also of cancers of tongue, mouth cavity, etc. In the female, the combined number of uterine and mammary cancers exceeds half of the total cancers, but except for these cancers of genital organs and reproductive glands, the cancers common to both sexes generally occur more frequently in male than in female. This is as I have already stated.

In considering especially cancers of the digestive canal, it is of great interest to note that while cancers of the upper part of the digestive canal, namely, mouth cavity, oesophagus, stomach, etc., are more frequent in male than in female, no marked difference in the cancer frequency of the lower part of the canal, from duodenum to rectum, can be found between the sexes. The causative mechanism of cancer development in the intestinal tube, regardless of whether it is congenital or acquired, may not be so different between the sexes as in the case of mouth cavity, oesophagus, and stomach, and the sexes may on that account show about the same ratio of cancer development. On the contrary, the upper digestive canal down to the stomach is conceivably exposed to more violent irritation in the male than in the female, because of the varied use of alcohol tobacco, etc. It seems probable that the difference in the degree of irritation may well account for the sexual difference in the frequency of cancer development in question.

Taking up next the statistics based on autopsy materials, we find, as seen in Tables C VII and C VIII, that the ratios of oesophageal, rectal, and intestinal cancers for Tokyo, Fukuoka, Kyoto, Niigata, etc., are about the same as in the clinical statistics just mentioned. In the male, oesophageal cancer is very abundant, constituting an important item along with hepatic cancer, next only to gastric cancer. The autopsy statistics agree with the clinical ones in showing that the figure for rectal cancer is greater than the total of all other intestinal cancers. These two statistics also

agree in that the ratio of rectal and intestinal cancers against the total cancers is about the same between the sexes, and that the ratio of oesophageal cancer against the total cancers is far greater in male than in female.

I shall next refer to the conditions in foreign countries and offer a comparison with the Japanese data.

That oesophageal cancer is more frequent in male than in female and is among the most important cancers of the male sex is common to all countries. It is conspicuous, however, that in the autopsy statistics for Leningrad, oesophageal cancer is exceedingly numerous, amounting to about one-half the number of gastric cancers in the male, and taking second rank among cancers in the female. This fact may possibly be related to the free use of strong alcoholic drinks (vodka). Wells reported that oesophageal cancer is fairly abundant in Chicago, and it would be of interest to know how the matter is standing since the prohibition law went into effect. Many persons have called attention to the possible relation between the copious consumption of Japanese sake, especially as served hot, and the development of oesophageal cancer.

According to the vital statistics, there are more deaths from intestinal cancer than from rectal cancer in both sexes in England (Table A VII). This is contrary to the condition in Japan. Especially in the female, intestinal cancer is placed as being more than twice as frequent as rectal cancer. Oesophageal cancer is far less frequent than intestinal and rectal cancers in both sexes.

The U.S.A. statistics (Tables A VIII and A IX) are closely allied to the English ones as regards the ratios of these three types of cancers, differing considerably from the Japanese data. In Bavaria, Germany (Table A X) rectal cancer is more frequent than intestinal cancer in the male, but the reverse is true in the female, thus differing from what prevails in Japan.

In Korea, (Table B XI), to judge from limited data, gastric and oesophageal cancers are more frequent in the male, and the

combined rectal and intestinal cancers are less numerous than oesophageal cancer in the female, showing about the same ratio for both sexes. These points resemble the Japanese statistics. In China gastric cancer is relatively infrequent, as already repeatedly stated, but it is worthy of special notice that in the male oesophageal cancer is more frequent than gastric cancer. Also, oesophageal cancer is seen more commonly in male than in female.

CHAPTER V.

UTERINE AND MAMMARY CANCERS.

It is necessary to give a special discussion concerning uterine and mammary cancers, which are the most important cancers in the female.

Uterine cancer constitutes one of the most important cancers of women, although the degree of importance varies in different countries. In certain countries it ranks first among all the cancers in the female, in other countries it takes second place next to gastric cancer, while in still other countries it may be preceded by mammary cancer in point of frequency. In any event, uterine cancer, together with gastric and mammary cancers form three major items among cancers of the female. It would therefore be of interest to compare the relative frequency of these cancers in different countries, not only from a statistical point of view, but also from the standpoint of furnishing an important factor in the consideration of the anti-cancer problem.

According to vital statistics, the number of females dying of cancers of the reproductive organs (46) during 1930 in Japan was 7,106, amounting to 32.7% of the total cancers which is 21,743, and is less than the number for gastric and hepatic cancers (44), that is, 10,507 (48%). The actual numbers of gastric and hepatic cancers respectively included under (44) cannot be determined, but there is no doubt that the majority of the cases are referable to gastric cancer. This makes it safe to surmise, as stated in Part I, that gastric cancer is more frequent than uterine cancer.

In statistics based on clinical diagnosis (Table B IX), on the contrary, uterine cancer ranks first with 4,201 (46.27%), followed by gastric cancer with 2,208 (24.32%), among the total cancers in the female, which is 9,174. (See also Chapter 3, Part II).

In the statistics based on autopsy material, there are, among the total of 230 cancers in the female, 77 gastric cancers (33.3%),

which ranks first, and 27 uterine cancers (11.69%), which is considerably less than gastric cancers. This is due to the fact that only about one-twelfth as many autopsy cases come from gynecological clinics as from internal clinics. (See also Chapter I, Part IV).

It appears that both in vital statistics (A) and in autopsy statistics (C), uterine cancer ranks second following gastric cancer, but in the statistics based on clinical diagnosis the position is reversed and uterine cancer ranks first followed by gastric cancer. How is such a discrepancy to be interpreted? It is necessary to clear up the question by elucidating which of these statistics fits into the truth. It is not easy to determine this point, however. A and C are both based on death certificates, while B, being based on clinical diagnosis, represents cancer morbidity, including presumably no small number of cases that are completely cured. It is therefore natural that the B statistics should give a higher figure for uterine cancer than do A or C. However, in my consideration of the cancer statistics as a whole, strict evidence to show that uterine cancer is more frequent than gastric cancer in the female is lacking. There is need for further investigation here. It is, however, safe to say that uterine cancer is very abundant in Japan and occurs at least in about the same number as does gastric cancer. It is also safe to estimate that there are more patients with uterine cancer than with gastric cancer.

Ogata* of Osaka published several reports on uterine cancer, and according to his latest paper,* 1,910 (3.3%) of 57,376 out-patients were diagnosed as having uterine cancer during 1929-32. If we added this report to our data for gynecological clinics in Part II, there would be a further elevation in the ratio of uterine cancer in the total data presented in Table B IX.

We now turn to mammary cancers.

Mammary and oesophageal cancers are each counted separately

*J. Ogata. Gann, vol. 27, No. 3, 1933.

in minor classification (47) and (44') in the International system of classification of vital statistics, and it is impossible to know the number of cancers in the entire country based on vital statistics. The deaths from mammary cancer in 1930 were only 714 (3.3%) against the total of 21,743 deaths in the female. This amounts to about one-tenth of the category (46), which is mostly made up of uterine cancers.

In clinical statistics (Table B IX) mammary cancer ranks fourth in both sexes combined, with 974 (4.69%). In the female it ranks third with 957, which is more than ten per cent of all cancers in the female, being preceded by uterine and gastric cancers, and is about three times as frequent as rectal cancer which ranks fourth. This shows that mammary cancer is not scarce in Japan. The majority of the patients are treated in surgical clinics, and of 957 cases 748 came from surgical clinics, and 95 from general hospitals with surgical service. The next largest number of patients is recorded for the Clinical Department of the Japanese Society of Cancer Research, with 89 (see Table D V). It may be seen from these facts that mammary cancer is treated mostly in surgical clinics in Japan. Abe's* report on the statistics of the Sato Surgical Clinic for 1899-1906 shows that mammary cancer ranks first, not only in the female but also in both sexes combined. The cancer cases considered were 425 males, 243 females, and totaled 668, of which 124 (including 2 males) were mammary cancers. There were also 91 (66 males and 25 females) having gastric cancers, and some cancers of the rectum, upper jaw, etc. The relatively small number of gastric cancers here is due to the limited extent to which the operation on internal cancers was practiced in those days, but the fair abundance of mammary cancer can be deduced from this compilation also.

In statistics based on autopsy material, we find in the female that in the early period of our Pathological Institute (Table C II)

* Abe. Gann, vol. 1, 1906.

mammary cancer ranks tenth with 8 (3.27%), in the later period (Table C III) sixth with 10 (4.33%), and in the total (Table C IV) eighth with 18 (3.78%). It is thus ranking below the cancers of stomach, uterus, gall-bladder, lung, ovary, liver, and rectum. This relative scarcity of mammary cancer is explainable by the small number of autopsy cases coming from surgical clinics and also by the fact that complete cures result in some cases from treatment, especially from operation at a suitable period. (See also Chapter I, Part IV).

As stated above, in vital statistics as well as in autopsy statistics, mammary cancer is not abundant, but it seems safe to say that this form of cancer is not necessarily scarce in clinical material. Thus, we find that patients with mammary cancer are not few in number in Japan, but the frequency in Japan is considerably less than in such countries as England or the U.S.A., where mammary cancer is especially abundant. In England, mammary cancer is more abundant than uterine or gastric cancer (Table A VII), and in the U.S.A. (Tables A VIII and A IX) it ranks second next to uterine cancer. In comparison with these countries there is a far less number of mammary cancers in Japan.

In Bavaria (Table A X) for 1926 a less number of mammary cancers are reported than uterine cancers, the ratio between the two being 446:740. A striking fact in Germany is the special prevalence of gastric cancer, not only in the male but in the female also, ranking first in the latter sex with 2,101.

I shall here tabulate gastric, uterine and mammary cancers out of my clinical statistics, classifying them according to the various clinical departments, and showing the actual number and the order of importance in each department.

There is a considerable difference in the death rate in females from mammary cancers among different countries. According to Hoffman,* the countries showing the highest rates are: England

*Hoffman. Some Principles of Cancer Statistics Research, 1931.

Table D IV.
Comparison of Gastric, Uterine, and Mammary Cancers in
various Clinical Departments.*

(Females)

| | No. of Patients | Gastric cancer | | | Uterine cancer | | | Mammary cancer | | |
|---|-----------------|----------------|---------|------|----------------|---------|------|----------------|---------|------|
| | | No. | % | Rank | No. | % | Rank | No. | % | Rank |
| General hospitals | 10,227 | 125 | 25.5 | II | 187 | 38.2 | I | 95 | 19.4 | III |
| Internal clinics | 44,539 | 940 | 68.0 | I | 22 | 1.5 | VIII | 9 | 0.7 | X |
| Surgical clinics | 31,077 | 814 | 34.0 | I | 47 | 2.0 | VI | 748 | 32.0 | II |
| Dermato-urological clinics | 72,186 | 1 | 1.2 | IX | 3 | 3.9 | VI | 13 | 16.7 | II |
| Hospitals for gastro-intestinal diseases | 6,441 | 289 | 78.0 | I | 2 | 0.5 | | 1 | 0.9 | |
| Clinical Dept. Jap. Soc. of Cancer Research | | 38 | 3.5 | III | 492 | 68.9 | I | 89 | 12.4 | II |
| Total | 164,470 | 2,207 | | | 753 | | | 955 | | |
| Gynecological clinics | 151,196 | 0 | | | 3,344 | 98.35 | I | 2 | | |
| Grand total | | 2,208 | (24.32) | | 4,201 | (46.27) | | 957 | (10.54) | |

* Excluding, pediatric, psychiatric, cosmetic ophthalmological, dental clinics, etc.

and Wales, 19.1%; Australia, 17.8%; Philippines, 14.0%; while Chile, 2.0%; Egypt, 6.0%; Hawaii, 6.0%; Spain 7.0%; Ceylon, 7.6%, are among the countries showing low rates. Japan's rate is given as 3.0%. These are all based on vital statistics, and it must be remembered that patients are actually more numerous than these figures indicate.

It is a conspicuous fact that mammary cancer is relatively infrequent in Japan, but is comparatively abundant in England, the U.S.A. and other Western countries. The possible relation of the period of suckling after childbirth to the development of mammary cancer is suggestive in this connection. In Japan it has been custo-

mary since olden times to suckle the infants for a long period of time, which stands in an interesting contrast to the habits in Western countries of preferring artificial nursing. It is worthy of serious consideration that such a parallelism exists between the suckling habits and the frequency of mammary cancer.

CHAPTER VI.

ON PROSTATE CANCER.

It is shown by various statistics and is even recorded in textbooks, that prostate cancer occurs in fair numbers in European countries and in America. In Japan, however, this belongs among the rare forms of cancer, as all pathologists have noticed. In the statistics of the late period of our Pathological Institute, there is only a single case of prostate cancer (0.37%), ranking 27th, among the total of 567 cancers in the male. In both early and later period combined there are five cases (0.45%) among 1,102 cancers, taking the 24th rank in point of frequency.

In the vital statistics of the Imperial Japanese Government, prostate cancer is incorporated with other cancers into the category (49) in minor classification, and the figure for this form of cancer alone is not mentioned. This made it impossible to touch upon this problem of prostate cancer in Part I of this paper.

Part II, dealing as it does with clinical statistics, offered a definite proof of the scarcity of prostate cancer. In general hospitals, only a single prostate cancer was recorded among 417 cancers in the male, while two cases (0.05%) were reported among 4,012 cancers in internal clinics, and seven cases (0.17%) among 4,171 cancers in surgical clinics. Even dermato-urological clinics recorded only twelve cases (4.04%) out of the total of 297 cases. Other clinical departments, including the clinical department of the Japanese Society of Cancer Research, reported no case of prostate cancer whatever. In the total clinical statistics (Table B IX) we find that out of 11,608 cancers in the male, there are only 22 (0.19%) prostate cancers, which ranks 24th in the order of frequency.

These observations described in Parts II and III of this paper clearly demonstrate that prostate cancer is exceedingly rare in Japan. Abe's* report on the statistics of the Sato Surgical Clinic

* Abe. Gann, vol. I, loc. cit.

included only a single prostate cancer among 425 cases. No prostate cancer is recorded in the statistical report of Sato and Tsutsui.

As stated above, there is a marked difference between the condition in Japan and the statistical data for Europe and America.

The report of the British Ministry of Health for 1930 gives as many as 1,434 (5.3%) prostate cancers among the total of 26,916 cancers in the male in England and Wales, where it ranks fifth following gastric cancer with 6,156, intestinal cancer with 3,588, rectal and anal cancers with 2,616, and hepatic and gall-bladder cancers with 1,497. That prostate cancer ranks ahead of the cancers of oesophagus, lung, urinary bladder, tongue, mouth cavity, tonsil, upper jaw, etc., is almost beyond the imagination of Japanese observers. British authorities, in pointing out the recent marked increase of prostate cancers, along with lung cancers, referred to the improvement in clinical diagnosis and the wider use of microscopical examination, which tended to discover more cases of prostate cancer among those formerly diagnosed simply as prostate enlargement. The hypertrophy of prostate glands has long been regarded as a fore-runner of prostate cancer, and Kaufmann, Ewing, etc., estimate that about ten per cent of prostate cancers originate from prostate hypertrophy.

In Japan we are informed by clinicians that prostate hypertrophy, just as prostate cancer, is rare.

It seems to be true that prostate cancer occurs mostly in men of advanced years. This is borne out by our statistics, and also by the report of Ishibashi and Takatsu. But the fact that prostate cancer alone is rare while cancers of other organs are abundantly found in persons of sixty or seventy years of age cannot be explained on the basis of age relations.

To mention a few examples other than the British statistics, in Bavaria, Germany, the latest report by Peter Haug* states that

* Peter Haug. Krebsstatistik. 1927 in Bayern. Zeit. f. Krebsf., XXXIX, 1933.

among 4,270 deaths in the male there were 2,474 gastric cancers (first rank) and 56 prostate cancers, this latter ranking seventh following cancer of stomach, pancreas, rectum, liver, oesophagus, urinary canal and bladder, and being ahead of skin, pharyngeal, pulmonary and other cancers.

According to Hoffman's report (Table A VIII), in five great cities in the U.S.A., there were 414 prostate cancers among the total of 6,514 cancers in the male. It follows in the order of frequency gastric cancer (1,819), cancers of peritoneum and intestine (653), of liver and gall-bladder (532), and of larynx and oesophagus (518) and stands ahead of rectal cancer (353). In San Francisco (Table A IX), for 1917-1927, prostate cancer ranks fifth with 218 out of the total of 3,462 cancers in the male. It is less in number than cancers of stomach, intestine, liver and gall-bladder, or of rectum, but is more abundant than cancers of oesophagus, lung, tongue, etc.

J. R. Caulk and S. B. Bonitt* emphasized that prostate cancer is relatively common in America and it forms an important urological problem.

As I have already stated in Chapter 4, Part III, (Table C VII) dealing with autopsy statistics, the ratio of prostate cancer to total cancers in the male is 6.27% for Dresden II, 9.5% for Göttingen, and 2.1% for Kiel, showing a great difference from the 0.37% of Japan. The ratio for Leningrad is relatively small, being 0.7%. A pathological laboratory in New York gives 3.96%. Autopsy statistics (Junghaus) for various European cities also give far higher ratios than our Japanese figures.

The great abundance of hepatic cancer and real scarcity of prostate cancer form two peculiarities of the cancer situation in Japan, being diametrically different from the state of affairs in Europe and America, an important problem for an attentive investigator.

*J. R. Caulk and S. B. Bonitt. Amer. J. of Cancer. No. 5, 1932.

CHAPTER VII.

SOME POINTS CONCERNING SKIN CANCER.

Skin cancers seem to be generally less frequent in Japan compared with the conditions in Europe and America.

As Tables A V and A VI show, the figures for skin cancer in the vital statistics for 1930 are 95 (0.5%) for the female and 126 (0.6%) for the male, including the cancer of penis, with the total of 221. This is in striking contrast to 849 (3.1%) skin cancers in the male and 447 (1.4%) in the female in England and Wales.

In the autopsy statistics, the combined figures of the early and late periods of our Pathological Institute are ten each of skin and penis cancers (0.91%), out of the total of 1,102 cancers in the male. In the female there are only three skin cancers (0.63%) among 476 cancers. Male and female combined show only 13 (0.82%) skin cancers out of the total of 1,579 cancers

Clinical statistics represent morbidity statistics, and may be expected to give a higher figure than the vital statistics or statistics based on autopsy material. As may be seen in Table B IX, in the total of all clinical departments, skin cancer ranks eighth in the male with 276 (2.37%), ninth in the female with 90 (0.99%), and tenth in both sexes combined with 366 (1.77%). The majority of these cases are referable to dermatological and surgical clinics. In the statistics for dermatological clinics (Table B VI) skin cancer ranks second in the male with 97 (32.66%), being next to the cancer of penis, and ranks first in the female with 41 (52.56%), and the total figure for both sexes combined is 138 (36.8%). In surgical clinics (Table B III), skin cancer takes sixth position in the male with 153 (3.57%), seventh place in the female with 46 (1.97%), and also seventh place in both sexes combined with 199 (3.06%).

In any of the three statistics above referred to, there is no description as to the site of the development of the skin cancer,

and it is not possible to say what part of the skin shows more cancers than another. In Japan skin cancers are generally less frequent than in Europe and America, but it is especially true that cancers of scrotum, face, cheek, etc., are very scarce. The material of the Dermatological Clinic of the Tokyo Imperial University also clearly substantiates this fact, according to the statement of Professor Toyama. Tsutsui's¹ report informs us that during fifteen years from 1887-1905 there were 274 cancers dealt with in dermatological, surgical and oto-rhinological clinics of the Chiba Medical College, and of this number 70 (25.6%) were skin cancers. Among these latter 29 occurred in the penis, which ranks first among the sites of skin cancer, and the remaining 41 were distributed as follows: Body trunk, 11; neck, 11; head, 7; nose, 5; eyelids, 4; ear, 3; upper lip, 3; upper extremity, 3; face, 3; lower extremity, 3; lower lip, 1; labia, 1. There was no cancer of the scrotum, and only a few cancers of the face—very conspicuous facts.

In England and Wales (Table A VII), there are in the male 162 (0.6%) cancers of the penis, and 60 (0.2%) of scrotum, against 627 (2.3%) of all other skin sites. In the female there are 447 (1.4%) skin cancers. These figures are based not on morbidity but on mortality statistics, and this fact further emphasizes the difference from the condition in Japan. In America (Table A IX) the total number of cancers of neck, face, cheek, ear, nose, and sites of the skin are fairly large both for male and female. The cancers of the face and body surface are also pretty numerous in Germany (Table A X).

It may be accepted as a fact that skin cancer is generally infrequent in Japan. According to the investigation conducted by the Social Bureau of the Imperial Government, there is practically no case of skin cancer among factory workers, in spite of the

¹Tsutsui, Y. On the site of the development of skin cancer in Japan. Gann, vol. I, 1911.

marked development in Japan of spinning, dying, mining, and other industries. Skin cancer as an occupational cancer constitutes no problem whatever in Japan.

CHAPTER VIII.

ON THE INCREASE OF LUNG CANCER.

Among cancers of various organs there are some that are said to be increasing in recent years, but most of these alleged increases are more rationally attributable to the increased rate of discovery through diagnostic improvement, rather than to the actual increase. In addition there is also the factor of the average increase of the longevity of human beings in general, which would increase the cancer rate in general, but would not account for the increase of any particular form of cancer. Much caution is necessary before one can state that cancers are increasing, but in the case of lung cancer, the fact of its actual increase is often accepted by competent authorities, and the studies carried out by Suzuki on the material available at our Pathological Institute also give evidence for the same conclusion. Words on this subject may not, therefore, be inappropriate.

As already stated in Chapter 3, Part III, there is a conspicuous increase of lung cancers, both in male and in female, in the later period of our Pathological Institute over the early period. This increase may be evident from the following tabulation :

| | Early Period | | | Late Period | | |
|-----------------------------|--------------|---------|-------|-------------|---------|-------|
| | Males | Females | Total | Males | Females | Total |
| Lung cancers | 24 | 9 | 33 | 35 | 18 | 53 |
| Ratio against total cancers | 4.23 | 3.67 | 4.06 | 6.52 | 7.83 | 6.91 |
| Order of frequency | 4th | 8th | 7th | 3rd | 3rd | 3rd |

The increase is evident in both sexes but it is especially so in the female. In the male, lung cancer takes the third rank following gastric and hepatic cancers, while in the female it is preceded by gastric and uterine cancers, taking also the third rank. This relative importance of hepatic, pulmonary and other cancers of internal organs is mainly due to the fact that most of the autopsy cases coming to our Pathological Institute are from internal clinics.

Even so, it is a striking phenomenon that lung cancers should so surpass other internal cancers, equally referable to the internal clinic, as to take the third rank in male, in female, as well as in both sexes combined. It seems to me that this increase of lung cancers has become particularly conspicuous during the past several years. According to Suzuki's investigation, lung cancers dealt with during the recent four years, 1929-1932, amounted to 11.7% of total cancers for that period. This condition may be expected to continue.

Granting that lung cancers are actually on the increase in recent years, it is of interest to inquire into its possible cause. The inhalation of various noxious gases may have some etiological significance, but there is no definite evidence. I shall refer to Suzuki's investigation showing that lung cancer is often accompanied by lung tuberculosis. In such cases tubercles are mostly in chronic proliferation and sclerotic phase with a preponderance of scar tissue. It is conceivable that abnormal regeneration of the epithelial cells in such areas as these might give rise to cancers, and as a matter of fact one frequently observes metaplasia of epithelium and its adenomatous proliferation in and around the old tubercular scars. There is also an agreement as to the site of cancer development and that of old tubercular lesions. All these points lead us to consider that there may well be an indirect relation between the recent increased rate of chronic or healing tendencies in lung tuberculosis, brought about by improved therapeutic methods, and the development of lung cancers. We are in agreement with the opinion of Ewing¹⁾ on this point.

¹⁾Ewing, J. Neoplastic Diseases, 1928.

CHAPTER IX.

SUMMARY AND CONCLUSIONS.

1. The purpose of the present investigation has been to make as accurate a survey as possible of the conditions of cancer development in Japan, looking into the relative frequency and possible increase and decrease of cancers of various organs, and to compare the results with what is known in foreign countries, pointing out any difference that may be found between them, with the object of elucidating the probable causes for the points of difference, and thus to contribute toward the fundamental knowledge in the anti-cancer problem.

2. In order to accomplish the above object, we made observations on the vital statistics of the Imperial Japanese Government, statistics based on clinical diagnoses collected from various clinical departments of several Universities and from a number of hospitals, as well as on statistics based on autopsy material. Each of these three statistics has merits and demerits. Vital statistics (Tables designated A) are unsurpassed as to the one important point of "mass observation", but is the least reliable of the three as to the accuracy of diagnosis. On the contrary, autopsy statistics are unrivalled as to the diagnostic accuracy but they have a disadvantage as to the number and the distribution to various clinical departments of the cases included. The statistics based on clinical diagnosis come in midway between the two. A careful comparison of these statistics and judicious judgment may yield a picture which is close to the actual cancer situation.

3. According to the vital statistics of the Imperial Government the actual number of deaths from cancer in Japan is annually about 42,000 to 43,000, including about the same number of males and females. When classified according to the medium classification of the International system, cancer ranks ninth in importance as cause of death, preceded by pneumonia and bronchitis, cerebral hemor-

rhage and encephalomalacia, pulmonary tuberculosis, nephritis, malformation and congenital debility. The last two of these categories, however, can hardly be recognized as independent diseases, and if we exclude these, cancer will rise to the seventh rank. It ranks higher than heart diseases and external causes. This order of importance of various causes of death has not changed for the past several years, and it shows a considerable difference from the conditions in European countries and America (See Chapters 1 and 2, Part I).

4. The cancer death rate in Japan is 6.8 per 10,000 of population. Among Western countries Italy alone shows cancer death rate below that of Japan (6.3), and all other countries show a higher rate. In the northern countries of Europe the rate is not infrequently more than twice as high as in Japan (Table A IV). These figures seem to suggest that there may be some racial differences in the susceptibility to cancer development.

5. Generally speaking, there are a far larger number of cases with clinical diagnosis of other diseases being found to have cancer upon autopsy than of cases clinically diagnosed as cancer but found to be without cancer at autopsy (Chapter 8, Part III). It is, therefore, reasonable to assume that the actual number of cancer deaths is greater than vital statistics show. This applies not only to Japan but to a varying extent also to all other countries. As far as Japan is concerned, my observations lead me to think that not more than about ninety per cent of cancer deaths are shown in the vital statistics.

6. Cancer deaths as they appear in the vital statistics of various countries are somewhat different from the actual number, and the method of compiling statistics, procedure of sending in death certificates, etc., are not the same for all countries. For these reasons no special significance should be attached to slight differences in figures for cancer deaths, ratios for so many thousands of population, etc., unless there is a considerable discrepancy. On the

contrary, it is not pointless to look for possible increase or decrease of cancers for each country by comparing a series of periodical statistics for that country.

7. More significant than that, however, is to investigate cancer rates for various organic systems and for individual organs in different countries on the basis of various accurate statistics. There are cancers of certain organs that show different ratios for males and for females, while others show no such difference, and among different countries certain organ cancers are rare in one and common in others. For the purpose of making such comparisons it is of primary importance to obtain accurate knowledge as to the frequency of various cancers in different countries by consulting all available statistics.

8. Vital statistics show that there is a tendency for a gradual increase of cancer in Japan, although the increase is not as conspicuous as in England or the United States of America. The increase, however, seems to be an indisputable fact. Although there is such an exceptional category as lung cancer, it must be remembered that there is an increasing number of cures for most forms of cancer, even though there is an increased morbidity. The increase in the figure for cancer deaths may conceivably be attributed to the increase in the number of cancers discovered due to the progress in diagnostic methods, and to the prolongation of the average age of mankind, but the major factor seems to be the former rather than the latter.

9. Among the cancers of various organic systems, those of the digestive system hold an overwhelming majority. In the male, cancers of this system occur in a far larger number than all other cancers put together. Even in the female, where cancers of uterus, mammary gland, and other organs of the reproductive system are abundant, the majority of other cancers belong to the digestive system. These facts are unanimously shown by all the available statistics, and the abundance of the cancers of the digestive system

is equally true in all the different countries.

10. Gastric cancer, especially, amounts to over 56% of all cancers in the male in clinical statistics (B), and to over 47.7% in autopsy statistics (C). In vital statistics (A) the combined figure for cancers of stomach, liver and gall-bladder is 75.4%. In the female, the actual number is less than in the male, and in addition the abundance of the cancers of the reproductive system brought about a considerable difference from the male as to the ratio of the gastric to all other cancers. The figures are, 24.3% in clinical statistics (B), 31.1% in autopsy statistics (C) and 48.3% in vital statistics, this last figure including also cancers of liver and gall-bladder.

11. Among cancers of the digestive canal, outside of stomach, those of oesophagus, intestine and rectum are important. In the male oesophageal cancer is the most abundant of the three, in vital as well as in autopsy statistics, but in clinical statistics the figure is nearly the same as that for rectal cancer. This probably represents the true state of affairs. The relative scarcity of rectal cancers in autopsy material is attributable to the one-sidedness of the available cases. In the female, rectal cancer is far more frequent than oesophageal cancer. Oesophageal cancer is one of the examples in which there is a marked difference in the frequency between the sexes. In China gastric cancer is scarce, while oesophageal cancer seems abundant.

12. In Japan, in both sexes, rectal cancer is more abundant than cancers of all other parts of the intestine put together. In this clinical and autopsy statistics agree. This offers a point on which conditions in Japan are just the opposite of those in several European countries.

13. A comparison between sexes of the frequency of cancers of the digestive canal shows that the actual number and ratio against total cancers of the cancers of tongue, mouth cavity, oesophagus and stomach are far more abundant in male than in female, but

intestinal and rectal cancers show no marked difference between the sexes. This is an interesting fact which suggests that males may consume more irritating food and drink, conducive of cancer, than do females.

14. Uterine cancer is very abundant in Japan, and in vital statistics (A) it amounts to 32.7% (including cancers of ovaries and Fallopian tubes) of all cancers, being less than the total of gastric and hepatic cancers. In clinical statistics (Table B IX) it is far more abundant than gastric cancer (24.3%) and ranks first with the ratio of 46.27%. In autopsy statistics (C), uterine cancer takes second rank, but this is due to the small number in which autopsy cases are received from gynecological clinics. It is safe to state that uterine cancer, along with gastric cancer, is most abundant, and it ranks first among all cancers in the female as to its morbidity rate.

15. It has been said that mammary cancer is relatively rare in Japan, but this statement is solely based on vital statistics (A), in which it amounts only to about one-tenth the number of uterine cancers. This is probably too small an estimate. As Table B IX shows, at least the figure for morbidity is not small, ranking third among cancers in the female, preceded only by uterine and gastric cancers. It is probably correct to estimate its frequency to be about one-fourth that of uterine cancer. This is a striking difference from the condition in Western countries, especially England and the United States of America.

16. The abundant occurrence of hepatic cancer in Japan offers one of the most conspicuous differences from the conditions in European countries and in America. This abundance of hepatic cancer is true in both sexes and in all parts of Japan. The majority of these cancers are hepatomas, instead of being cholangiomas. Some hepatomas are congenital and occur in suckling infants, but when they develop in adults they are often preceded by various forms of liver cirrhosis.

17. Prostate cancer stands in the opposite relation to hepatic cancer, in that it is fairly common in Europe and America but is one of the exceedingly rare cancers in Japan, as I have already fully set forth in Parts II and III. The hypertrophy of prostate gland, which may be regarded as a forerunner of prostate cancer, also belongs to the uncommon diseases in Japan.

18. Skin cancers of various parts of the body surface seem less frequent in Japan than in Europe and America. Cancers of cheek, scrotum, etc., are among the rarest cancers in Japan. Skin cancer is generally not abundant in Japan, and investigations of various industrial factories show that there is absolutely no necessity for especially dealing with skin cancer as an occupational disease.

19. The recent increase of pulmonary cancer is evident also in Japan, as especially clearly shown by the autopsy statistics. There are many different opinions as to the cause of this increase, but the investigation by Suzuki of our Pathological Institute leads me to think that at least one of the main causes is related to the increased rate of healing of pulmonary tuberculosis, cancer presumably developing in and around the healed tubercular lesion or scar tissue.

20. In comparing the relative frequency of organ cancers in different countries or cities, it is necessary to pay full attention to the material on which the statistics under consideration are based. In autopsy statistics, especially, the type of clinics supplying the autopsy cases largely determine the kind of organs with cancer, and there is a wide difference in the number of autopsy cases coming from different clinical departments. Without due consideration on this point, no comparison of the frequency of cancer in different organs can be expected to accurately indicate the true state of affairs.

21. Observations on the frequency in male and female of cancers common to both sexes, that is, excluding the cancers of

reproductive organs, show that most cancers occur more frequently in male than in female. This is an outstanding phenomenon, and according to my statistical results cancers of stomach, oesophagus, tongue, mouth cavity, pharynx, liver, larynx, lip, urinary bladder, etc., all show a marked preponderance in the male. Cancers of lung, bile-duct, duodenum, rectum, pancreas, parotid gland, suprarenal gland, kidney, etc., are either equally distributed between the sexes or show very slight discrepancy. Only cancers of thyroid, gall-bladder, urethra, etc., are more frequent in female than in male.

22. The above mentioned facts seem to suggest that environmental or acquired factors, rather than congenital disposition, stand in significant relation to the development of cancer, as illustrated by irritating food and drink, various occupational cancers, parallelism between the frequency of precancerous diseases and cancer development, etc. The abundance of uterine and mammary cancers in the female is also subject to a similar explanation.

23. Cancer development with the exception of hepatic, testicular, and renal cancers, takes place most frequently in people of advanced age, but it occurs sometimes, though rarely, in youth in the teens or twenties. In spite of this, if we compare the age groups over and below sixty in the vital statistics (Table A V), we find that all the categories of from 43 to 49 of the International classification are more frequent after the age of sixty than before in the male. In the female, only cancers of the reproductive organs are more frequent before the age of sixty than after, but all other cancers are, as in the male, more abundant after sixty. The small proportion in which the population survives after the age of sixty adds weight to the above evidence showing that cancer is a disease of old age. In both sexes, a prolongation of average longevity in any country will naturally tend to increase the cancer death rate for that country. The fact that cancers of female reproductive organs alone give more than twice the death rate before sixty as

after that age is due to the fact that uterine cancer is most abundant in women in the forties and fifties, and also that ovarian cancer usually develops in relatively young women.

24. The development of cancers in internal organs is in most cases more frequent in certain definite parts of each organ. Some cancers readily metastasize and others seldom do, while certain cancers produce metastases through the blood circulation. The development, growth, and dissemination of cancer is thus very varied and complex, but detailed investigations invariably give a clue to the cause of these various behaviors.

25. It is natural that some of the cancers of internal organs are very difficult to diagnose clinically. Among my materials, cancers of suprarenal gland, duodenum, etc., seem especially difficult, and diagnosis of cancers of pancreas, gall-bladder, bile-duct, pleura, colon, caecum, etc., would not seem to be easy, being easily confused with cancers of other nearby organs. A comparison of clinical and autopsy diagnoses is presented in Chapter 8, Part III, which may prove of interest to clinical workers.

26. In conclusion I wish to repeat that the present statistical study has given an additional support to the idea that the environmental causes rather than the congenital factors should be emphasized in the study of cancer development.

This problem has already been fairly well cleared up through the observations in human pathology and animal experiments, and it is generally agreed that in the explanation of cancer development Virchow's irritation theory — the presence of various precancerous conditions — has a deep significance. Statistical studies also furnish many facts substantiating the above idea, and some of the more important of these may be mentioned as follows:—

That cancer is a disease of advanced ages. — That in the female uterine and mammary cancers, are especially numerous and that this phenomenon is related to pregnancy, parturition, etc. — That most of the cancers of internal organs common to both sexes,

excluding those of gall-bladder, thyroid, etc., are more frequent in male than in female. — That the cancer of digestive system is far more abundant than that of other systems. — That among cancers of digestive canal, those occurring in the upper part, from mouth cavity to stomach, are especially more frequent in male than in female. — That different countries with different modes of living, including food and drink, often show striking differences in the frequency of cancers of certain organs.

All these facts cannot be explained on the basis of congenital factors, and bring us face to face with the great problem of cancer prevention, which should be investigated along with the methods of treatment. It should be our mission to contrive some preventative measures realizing the actual situation which we have before us.

昭和九年二月二十日印刷

昭和九年二月二十五日發行

| | |
|---|----------------|
| 癌 | 邦文(歐文抄録付)年四回發行 |
| | 一册正價金壹圓五拾錢 |
| | 一册郵税金四錢 |

東京市麻布區市兵衛町二ノ八八

編輯兼者 長 與 又 郎

東京市本郷區駒込林町百七十二番地

印刷者 柴 山 則 常

東京市本郷區駒込林町百七十二番地

印刷所 合資 杏 林 含
會社

東京市豐島區西巢鴨二丁目二千六百十五番地

發行所 財團 癌 研 究 會
法人

振替東京參〇〇七壹番



